

2018 LONG-TERM MONITORING DATA SUMMARY REPORT ST. LAWRENCE RIVER REMEDIATION PROJECT

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ACRONYMS AND ABBREVIATIONS

LTMP	Long-Term Monitoring Plan
mg/kg	milligrams per kilogram
MS	matrix spike
MSD	matrix spike duplicate
ND	non-detect
ng/kg	nanograms per kilogram
PCB	polychlorinated biphenyl
QA	quality assurance
QC	quality control
SAV	submerged aquatic vegetation
Site	St. Lawrence River Remediation Project located adjacent to the Alcoa Massena East Plant in Massena, New York
SLRRP	St. Lawrence River Remediation Project
TCDF	Tetrachlorodibenzo-furan
USEPA	U.S. Environmental Protection Agency
YOY	young-of-year

1 INTRODUCTION

This document presents the results of the Year 9 (2018) long-term monitoring for the St. Lawrence River Remediation Project (SLRRP) located adjacent to the Reynolds Metals Company, LLC Massena East Plant in Massena, New York (Site; Figure 1-1). This monitoring was conducted in accordance with the Site Long-Term Monitoring Plan (LTMP; Anchor QEA and ARCADIS, May 2012a), LTMP Addendum (Anchor QEA and ARCADIS, September 2012), and LTMP Summary Matrix for Years 6-10 (Alcoa, November 2015).

1.1 Long-Term Monitoring Program Objectives

As detailed in the LTMP and LTMP Addendum, specific objectives of the long-term monitoring program are as follows:

- Verify that the cap armor layer remains intact
- Evaluate trends in young-of-year (YOY) fish tissue concentrations within the remediation area and at an upstream background area
- Document the benthic community present in the capped cells, in a subset of the dredged cells, and at upstream background locations
- Document the sediment quality of the 2009 post-cap habitat layer and surface sediment concentrations in the cells dredged in 2001
- Estimate the presence and density of submerged aquatic vegetation (SAV) within the 2001 and 2009 dredged and capped areas and at upstream background locations
- Assess the survival of the willow and dogwood plantings along the shoreline
- Conduct adult fish monitoring to provide data on fish tissue concentrations at the request of the United States Environmental Protection Agency (USEPA)

Monitoring activities that have been conducted over time to satisfy the objectives include the following:

- Monitoring the physical integrity of the cap (i.e., verification of cap presence)
- Fish monitoring (YOY and adult species)
- Benthic community invertebrate survey
- Sediment sampling
- SAV surveying

- Shoreline restoration monitoring

Details regarding the 2018 long-term monitoring activities are provided in this report, and summaries of the previous monitoring events (2010 through 2014 and 2016 through 2017) are included in each year's respective Long-Term Monitoring Data Summary Report (Anchor QEA and ARCADIS, March 2011, May 2012b, February 2013, February 2014, October 2015, and March 2017 and Arcadis, April 2018). No long-term monitoring activities were performed in 2015 (only adult fish monitoring scheduled) as USEPA requested that the fish monitoring be postponed to 2016 (USEPA, September 2015).

1.2 Document Organization

Details regarding the 2018 long-term monitoring field efforts and results are provided in Section 2. Section 3 presents a summary of the overall long-term monitoring program components and schedule. References cited as sources for this document are provided in Section 4. Appendix A presents the data validation report.

2 LONG-TERM MONITORING PROGRAM

The 2018 long-term monitoring program included only fish monitoring – specifically the collection of YOY and adult fish. YOY fish collections targeted spottail shiners (*Notropis hudsonius*), which are a prevalent minnow species and forage fish in the St. Lawrence River. Adult fish collections targeted smallmouth bass (*Micropterus dolomieu*; a top-down predator) and brown bullhead (*Ictalurus nebulosus*; a bottom feeder), which are prevalent game fish species in the St. Lawrence River.

Resident fish sampling and processing was performed September 26-28 and October 2, 2018 at the Site, downstream of the Site, and at an upstream background area in accordance with the LTMP (Anchor QEA and ARCADIS, May 2012a) and the LTMP Addendum (Anchor QEA and ARCADIS, September 2012). The objective of the YOY sampling is to evaluate trends in polychlorinated biphenyl (PCB) fish tissue concentrations within the remediation area of the Site and at an upstream background area in the St. Lawrence River. The objective of the adult fish sampling is to provide data on the PCB fish tissue concentrations within the remediation area of the Site, along the southern shoreline between the downstream Site boundary in the vicinity of the bridge to Canada and the upstream boundary of Racer Trust (formerly General Motors), and at an upstream background area in the St. Lawrence River. This was the sixth YOY fish sampling event (sampling occurred previously in 2010, 2011, 2012, 2014, and 2016) and the third adult fish sampling event (sampling occurred previously in 2012 and 2016).

The sampling approach and discussion of results for YOY and adult fish monitoring are presented in Sections 2.1 and 2.2, respectively.

2.1 YOY Monitoring

2.1.1 Methods

In accordance with the LTMP (Anchor QEA and ARCADIS, May 2012a), YOY spottail shiners were targeted from the Site and from a background location upstream of the Robert Moses-Saunders Power Dam in the vicinity of Barnhart Island. Sampling locations are shown on Figures 2-1 and 2-2. Fish were collected using a boat-mounted electrofishing unit and

submitted for analysis of PCB Aroclors and lipids in whole-body composites. At the request of USEPA, a subset of samples was also analyzed for dibenzofurans. Ten whole-body YOY shiner composite samples were collected from the Site remediation area, and five whole-body YOY shiner composite samples were collected from the upstream background area (Figures 2-1 and 2-2). Fish were collected from locations across the Site and background area, where available, and composited to form the required number of samples. As such, the sample results are representative of fish captured within the sample areas, rather than at individual locations. Each whole-body YOY spottail shiner sample contained between 15 and 53 individual fish, with fewer fish in samples submitted for PCB analysis only and more fish in samples submitted for both PCB and dibenzofuran analysis to meet analytical testing mass requirements. The number of fish, minimum and maximum size range of fish per sample, and the total weight of each sample are presented in Table 2-1.

All YOY spottail shiner samples were packaged in the field and shipped to Pace Analytical, Inc. (Pace) in Green Bay, Wisconsin for processing and analysis. All whole-body samples were analyzed for PCBs (Aroclor; Method 8082) and percent lipids (gravimetric method), and four samples were also analyzed for dibenzofurans (Method 8290; three from the Site area and one from the background area). Quality assurance/quality control (QA/QC) consisted of one matrix spike (MS) sample and one matrix spike duplicate (MSD) sample prepared by the laboratory. Data validation was performed on the chemistry data, and all data were determined to be usable. A data validation report prepared based on the analytical method and USEPA guidelines is provided in Appendix A.

2.1.2 Results

Analytical results for the YOY spottail shiner samples are presented in Table 2-1 for PCBs, Table 2-2 for dibenzofurans, and Figure 2-3 for both PCBs and dibenzofurans.

Spottail shiner PCB results in 2018 from the Site ranged from 0.219 milligrams per kilogram (mg/kg) to 0.614 mg/kg with a mean of 0.384 mg/kg wet weight. Lipid-normalized PCB results ranged from 4.1 to 11.4 mg/kg-lipid with a mean of 7.6 mg/kg-lipid. Background sample PCB results ranged from 0.014 to 0.034 mg/kg with a mean of 0.019 mg/kg wet

weight. Lipid-normalized PCB results for the background samples ranged from 0.33 to 0.97 mg/kg-lipid with a mean of 0.53 mg/kg-lipid.

Temporal trends in PCB concentrations in whole-body YOY spottail shiner samples at the Site have varied but have remained consistently low (Figure 2-3 and Table 2-3 below). In 2018, mean PCB concentrations were lower than those observed in 2010 and 2011 and similar to or slightly higher than those observed in 2012, 2014 and 2016. Lipid-normalized PCB results show a similar trend. At the upstream background area, PCBs were non-detect (ND; typically <0.05 mg/kg) in all sampling years except 2018, which had detectable concentrations ranging from 0.014 to 0.034 mg/kg with a mean of 0.019 mg/kg (Figure 2-3 and Table 2-3 below). Note that detection limits changed in 2018 as the Pace Laboratory in Green Bay, Wisconsin was used instead of the Pace in Schenectady, New York (which has discontinued operations). The PCB detection level decreased from 0.05 mg/kg to 0.0125 mg/kg in 2018. Mean lipid-normalized PCBs in YOY fish in the upstream background area show a similar trend.

Table 2-3: Mean YOY Spottail Shiner PCB Concentrations Over Time

Year	Background		Site	
	Mean	Min-Max	Mean	Min-Max
Total PCBs (mg/kg)				
2010	ND	0.05	0.92	0.49-1.3
2011	ND	0.05	0.41	0.28-0.76
2012	ND	0.05	0.23	0.12-0.33
2014	ND	0.05	0.15	0.07-0.48
2016	ND	0.05	0.028	0.05-0.052
2018	0.019	0.014-0.034	0.38	0.22-0.61
Lipid Normalized-PCBs (mg/kg-lipid)				
2010	0.67	0.59-0.76	24	11-65
2011	0.64	0.52-0.80	7.2	4.8-12
2012	0.81	0.73-0.88	4.8	2.8-8.3
2014	0.53	0.47-0.61	2.5	1.2-7.3
2016	0.62	0.53-0.71	1.4	0.46-5.2
2018	0.53	0.33-0.97	7.6	4.1-11

For dibenzofurans, of the ten compounds analyzed for, the results for both the Site and upstream background samples were non-detect in spottail shiners in 2018 except for 2,3,7,8-Tetrachlorodibenzo-furan (TCDF), which was detected in all Site samples (n=3) but not the upstream background sample (n=1) (Table 2-2). The 2,3,7,8-TCDF results ranged from 3.5 to 4.3 nanograms per kilogram (ng/kg) with a mean of 3.8 ng/kg wet weight for the Site

samples. The background location for 2,3,7,8-TCDF was non-detect at a reporting limit of 0.5 ng/kg.

Temporal trends in dibenzofuran concentrations in whole-body YOY spottail shiner samples at the site decreased from 2010 to 2016 but increased in 2018 (three Site samples and one background sample each per year) (Figure 2-3 and Table 2-4 below). As noted above, 2,3,7,8-TCDF was the only compound detected, and was present in all Site samples for all years and in the upstream background samples for all years except 2016 and 2018.

Table 2-4: Mean YOY Spottail Shiner Dibenzofuran Concentrations Over Time

Year	Background	Site	
	Mean	Mean	Min-Max
2,3,7,8-TCDF (ng/kg)			
2010	0.53	3.5	(3.2-3.7)
2011	0.56	3.3	(3.1-3.5)
2012	0.58	2.5	(2.1-2.8)
2014	0.62	1.7	(1.5-2.0)
2016	0.50	1.7	(1.6-1.7)
2018	0.25	3.8	(3.5-4.3)

2.2 Adult Fish

2.2.1 Methods

In accordance with the LTMP Addendum (Anchor QEA and ARCADIS, September 2012), adult (greater than or equal to 25 centimeters [cm]) smallmouth bass and adult brown bullhead were targeted for collection from the Site, downstream of the Site from the southern shoreline between the downstream Site boundary in the vicinity of the bridge to Canada and the upstream boundary of Racer Trust (formerly General Motors), and from a background location upstream of the Robert Moses-Saunders Dam. Sampling locations are shown on Figures 2-1 and 2-2. Fish were collected using a boat-mounted electrofishing unit, with some limited angling for bullhead and bass, and were submitted for analysis of PCB Aroclors and lipids in edible fillets.

Six individual smallmouth bass samples were collected from the upstream background area, Site remediation area, and the area downstream of the Site (Figures 2-1 and 2-2). A combination of brown bullhead and white sucker (*Catostomus commersoni*; a bottom feeder)

were collected from the Site remediation area, the upstream background area and six white sucker were collected from the area downstream of the Site to complete the sample size (Figures 2-1 and 2-2). White sucker were collected as a substitute species due to limited availability of brown bullhead in accordance with the LTMP Addendum. In total, 18 adult bass and 18 adult bullhead/white sucker samples were collected. The species, total length, and total weight of each fish in a sample is presented in Table 2-5.

All adult fish samples were packaged in the field and shipped to Pace for processing and analysis. All samples were analyzed for PCBs (Aroclor Method 8082) and percent lipids (gravimetric method) in edible fillets. QA/QC consisted of two MS samples and two MSD samples prepared by the laboratory. Data validation was performed on the chemistry data, and all data were determined to be usable. A data validation report prepared based on the analytical method and USEPA guidelines is provided in Appendix A.

2.2.2 Results

Analytical PCB results for all smallmouth bass and brown bullhead/white sucker samples are presented in Table 2-5 and Figures 2-4 and 2-5, respectively.

For the Site location, smallmouth bass PCB results in 2018 ranged from 0.29 to 2.5 mg/kg with a mean of 1.3 mg/kg wet weight. Lipid-normalized PCB results ranged from 19 to 100 mg/kg-lipid with a mean of 50 mg/kg-lipid. Brown bullhead/white sucker PCB results from the Site ranged from 0.018 to 0.38 mg/kg with a mean of 0.18 mg/kg wet weight. Lipid-normalized PCB results ranged from 1.6 to 27 mg/kg-lipid with a mean of 14 mg/kg-lipid.

For the location downstream of the Site, smallmouth bass PCB results in 2018 ranged from 0.093 to 0.46 mg/kg with a mean of 0.27 mg/kg wet weight. Lipid-normalized PCB results ranged from 4.8 to 23 mg/kg-lipid with a mean of 11 mg/kg-lipid. White sucker sample PCB results from downstream of the Site ranged from 0.014 to 0.25 mg/kg with a mean of 0.11 mg/kg wet weight. Lipid-normalized PCB results ranged from 1.1 to 15 mg/kg-lipid with a mean of 7.1 mg/kg-lipid.

For the background area, smallmouth bass PCB results in 2018 ranged from 0.014 to 0.14 mg/kg with a mean of 0.052 mg/kg wet weight. Lipid-normalized PCB results ranged from 0.63 to 2.4 mg/kg-lipid with a mean of 1.3 mg/kg-lipid. All brown bullhead/white sucker background samples were non-detect for PCBs (at a reporting limit of 0.0125 mg/kg and 0.025 mg/kg). Lipid-normalized PCB values for brown bullhead/white sucker background samples, using half the detection limit for calculations, ranged from 0.30 to 0.92 mg/kg-lipid with a mean of 0.59 mg/kg-lipid.

Temporal trends in PCB concentrations in smallmouth bass samples were similar between the Site and downstream of Site locations, with the 2018 and 2012 results being lower than the 2016 results at all locations (Figure 2-4 and Table 2-6 below). Lipid-normalized PCB results show a similar trend. At the upstream background area, PCB concentrations were similar between years, being below, at, or just above the detection limits (Figure 2-4 and Table 2-6 below). As such, lipid-normalized PCBs in smallmouth bass in the upstream background area were also low.

Table 2-6: Mean Smallmouth Bass PCB Concentrations Over Time

Year	Background		Site		Downstream	
	Mean	Min-Max	Mean	Min-Max	Mean	Min-Max
Total PCBs (mg/kg)						
2012	0.01	0.05-0.28	0.79	0.33-2.5	0.14	0.05-0.43)
2016	0.07	0.05-0.22	3.3	0.90-7.1	2.7	0.44-11)
2018	0.052	0.014-0.14	1.3	0.29-2.5	0.26	0.093-0.46)
Lipid Normalized-PCBs (mg/kg-lipid)						
2012	3.0	0.74-8.7	31	11-81	12	1.0-37
2016	2.3	0.70-7.9	160	49-263	133	18-523
2018	1.3	0.63-2.4	50	19-100	11	4.8-23

Temporal trends in PCB concentrations in brown bullhead/white sucker samples varied, with results in 2018 being lower than previous results (2012 and 2016) at the downstream of Site location, and results in 2018 being lower than (2012) or similar to (2016) previous results at the Site location (Figure 2-5 and Table 2-7 below). Lipid-normalized PCB results show a similar trend. At the upstream background area, PCB concentrations were similar between years, being below the detection limit (Figure 2-4 and Table 2-7 below). As such, lipid-normalized PCBs in brown bullhead in the upstream background area were also low.

Table 2-7: Mean Brown Bullhead PCB Concentrations Over Time

Year	Background		Site		Downstream	
	Mean	Min-Max	Mean	Min-Max	Mean	Min-Max
Total PCBs (mg/kg)						
2012	ND	(0.05-0.05)	0.48	(0.075-0.96)	0.29	(0.05-0.68)
2016	ND	(0.05-0.05)	0.069	(0.05-0.29)	0.43	(0.05-2.4)
2018	ND	(0.013-0.05)	0.18	(0.018-0.38)	0.11	(0.014-0.25)
LN-PCBs (mg/kg-lipid)						
2012	1.7	(0.71-3.9)	43	(19-73)	29	(1.7-70)
2016	1.9	(1.3-2.6)	11	(3.9-34)	29	(2.2-103)
2018	0.59	(0.30-0.92)	14	(1.6-27)	7.1	(1.1-15)

3 SCHEDULE

The 2018 efforts represents Year 9 of the SLRRP LTMP. No monitoring activities will be performed in 2019 (Year 10) of the program (Alcoa, November 2015). Table 3-1 below summarizes the monitoring components for 2010 through 2019 (Years 1 through 10).

Table 3-1: Years 1 through 10 Long-Term Monitoring Components

Monitoring Activity	Years 1 through 5					Years 6 through 10				
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Physical Condition of the Cap	X	X	X	X	X			X		
YOY Fish	X	X	X		X		X		X	
Adult Fish			X				X		X	
Benthic Community Survey		X		X				X		
Sediment Sampling		X		X			X			
SAV Survey		X		X				X		
Shoreline Restoration	X	X		X						

Notes:

1. No long-term monitoring activities were performed in 2015 (adult fish monitoring only scheduled) as USEPA requested that the fish monitoring be postponed to 2016.
2. Shoreline restoration monitoring not required in Years 6 through 10 based on results of the survey activities performed in 2011 and 2013.

The monitoring results from the initial 5-year monitoring period (2010 through 2014) served as the basis for the Third Five Year Review Report (USEPA, August 2016). As outlined in USEPA's 2016 five-year review, continued monitoring was required over the next 5-year period (2015 through 2019) and results from these efforts will be used as the basis for the next required 5-year National Contingency Plan review.

4 REFERENCES

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TABLES

Table 2-1
2018 Resident Fish Monitoring - Young-of-Year Spottail Shiner Field Data and PCB Results

2018 Long-Term Monitoring Data Summary Report
St. Lawrence River Remediation Project, Massena, New York

Species	Sample Area	Sample ID	Date Collected	Fish per Sample	Length Range (cm)	Weight (g)	Lipid (percent)	PCB (mg/kg wet)	PCB (mg/kg-lipid)
Spottail Shiner	Site	FS7-2227-SS	9/26/18	15	5.1 - 6.5	26	5.6	0.320 J	5.7
		FS7-2228-SS	9/26/18	15	5.4 - 6.5	24	5.1	0.398 J	7.8
		FS7-2229-SS	9/26/18	15	5.5 - 6.6	26	5.1	0.503 J	9.9
		FS7-2230-SS	9/26/18	15	5.3 - 6.7	25	5.5	0.224 J	4.1
		FS7-2231-SS	9/26/18	15	5.3 - 6.4	28	5.0	0.415 J	8.3
		FS7-2232-SS	9/26/18	15	5.3 - 6.3	25	4.5	0.219 J	4.9
		FS7-2233-SS	9/26/18	15	5.3 - 6.8	26	5.4	0.614 J	11.4
		FS7-2234-SS	9/26/18	32	4.8 - 6.1	60	4.8	0.367 J	7.6
		FS7-2235-SS	9/26/18	33	5.3 - 6.7	57	5.2	0.280 J	5.4
		FS7-2236-SS	9/26/18	33	5.0 - 6.7	58	4.7	0.502 J	10.7
Background	Background	FS8-2256-SS	9/27/18	15	5.4 - 6.8	31	3.9	0.0174 J	0.45
		FS8-2257-SS	9/27/18	15	5.5 - 6.8	31	3.0	0.0148 J	0.49
		FS8-2258-SS	9/27/18	15	5.8 - 6.7	31	3.5	0.0341	0.97
		FS8-2259-SS	9/27/18	15	5.5 - 6.9	32	3.5	0.0137 J	0.39
		FS8-2260-SS	9/27/18	53	5.0 - 6.9	111	4.1	0.0136 J	0.33

Notes:

1. Approximate sample collection locations are shown on Figures 2-1 and 2-2.
2. Additional fish were collected for FS7-2234-SS, FS7-2235-SS, FS7-2236-SS, and FS8-2260-SS as these composite samples were analyzed for PCBs and dibenzofurans (see Table 2-2).
3. cm = centimeter
4. g = gram
5. mg/kg wet = milligrams per kilogram wet weight
6. mg/kg-lipid = milligrams per kilogram lipid normalized; half the detection limit was used for calculating lipid-normalized PCB concentrations for non-detect samples
7. J = the compound was positively identified; however, the associated numerical value is an estimated concentration

Table 2-2
2018 Resident Fish Monitoring - Young-of-Year Spottail Shiner Dibenzofuran Results

2018 Long-Term Monitoring Data Summary Report
St. Lawrence River Remediation Project, Massena, New York

Species Sample Area	Spottail Shiner			Background
	Site Sample ID	FS7-2234-SS	FS7-2235-SS	
Date Collected	9/26/18	9/26/18	9/26/18	9/27/18
2,3,7,8-TCDF (ng/kg)	3.7	3.5	4.3	ND (0.5)
1,2,3,7,8-PeCDF (ng/kg)	ND (2.5)	ND (2.5)	ND (2.5)	ND (2.5)
2,3,4,7,8-PeCDF (ng/kg)	ND (2.5)	ND (2.5)	ND (2.5)	ND (2.5)
1,2,3,4,7,8-HxCDF (ng/kg)	ND (2.5)	ND (2.5)	ND (2.5)	ND (2.5)
1,2,3,6,7,8-HxCDF (ng/kg)	ND (2.5)	ND (2.5)	ND (2.5)	ND (2.5)
2,3,4,6,7,8-HxCDF (ng/kg)	ND (2.5)	ND (2.5)	ND (2.5)	ND (2.5)
1,2,3,7,8,9-HxCDF (ng/kg)	ND (2.5)	ND (2.5)	ND (2.5)	ND (2.5)
1,2,3,4,6,7,8-HpCDF (ng/kg)	ND (2.5)	ND (2.5)	ND (2.5)	ND (2.5)
1,2,3,4,7,8,9-HpCDF (ng/kg)	ND (2.5)	ND (2.5)	ND (2.5)	ND (2.5)
OCDF (ng/kg)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)

Notes:

1. Approximate sample collection locations are shown on Figures 2-1 and 2-2.
2. ng/kg = nanograms per kilogram
3. ND = non-detect; the value in parenthesis is the associated reporting limit

Table 2-5
2018 Resident Fish Monitoring - Adult Fish Field Data and PCB Results

2018 Long-Term Monitoring Data Summary Report
St. Lawrence River Remediation Project, Massena, New York

Sample Area	Species	Sample ID	Date Collected	Length (cm)	Weight (g)	Fish Collection Location	Lipid (percent)	PCB (mg/kg wet)	PCB (mg/kg-lipid)
Background	Smallmouth bass	FS8-2304-SB	10/2/18	40.7	1318	N44.97367 W74.88156	6.0	0.144 J	2.4
		FS8-2305-SB	10/2/18	39.7	1078	N44.97353 W74.88151	4.5	0.103 J	2.3
		FS8-2312-SB	10/2/18	26.9	280	N44.99501 W74.89213	2.6	0.0214 J	0.82
		FS8-2313-SB	10/2/18	26.1	286	N44.99917 W74.88754	2.1	0.0177 J	0.84
		FS8-2314-SB	10/2/18	25.4	240	N44.99981 W74.88466	2.4	0.0152 J	0.63
		FS8-2315-SB	10/2/18	24.9	240	N44.99914 W74.88777	2.1	0.0135 J	0.64
	Brown bullhead	FS8-2262-BB	9/28/18	28.3	342	N44.94064 W74.99099	1.3	0.0125 U	0.48
		FS8-2263-BB	9/28/18	31.9	468	N44.94062 W74.99916	1.6	0.0125 U	0.39
		FS8-2264-BB	9/28/18	29.6	336	N44.94065 W74.99923	1.5	0.025 U	0.83
	White sucker	FS8-2261-WS	9/28/18	38.5	912	N44.94056 W74.99877	0.68	0.0125 U	0.92
		FS8-2316-WS	10/2/18	30.6	344	N44.99197 W74.89358	0.99	0.0125 U	0.63
		FS8-2317-WS	10/2/18	46.2	1266	N44.99147 W74.88963	2.1	0.0125 U	0.30
Site	Smallmouth bass	FS7-2237-SB	9/26/18	48.3	1682	N44.98615 W74.75466	0.96	0.292 J	30.4
		FS7-2238-SB	9/26/18	42.5	1248	N44.98639 W74.75112	3.5	2.24 J	64.0
		FS7-2239-SB	9/26/18	33.8	568	N44.98674 W74.74916	2.5	2.49 J	99.6
		FS7-2240-SB	9/26/18	40.0	960	N44.98681 W74.74873	2.3	0.859 J	37.3
		FS7-2241-SB	9/26/18	41.7	1332	N44.98670 W74.74712	3.5	1.72 J	49.1
		FS7-2242-SB	9/26/18	38.3	928	N44.98687 W74.74664	2.1	0.404 J	19.2
	Brown bullhead	FS7-2307-BB	10/2/18	36.5	816	N44.98654 W74.75118	1.1	0.199 J	18.1
		FS7-2244-WS	9/26/18	44.5	978	N44.98616 W74.74429	0.70	0.111	15.9
		FS7-2245-WS	9/26/18	43.8	1008	N44.98657 W74.74541	1.4	0.384 J	27.4
	White sucker	FS7-2301-WS	10/2/18	43.8	1068	N44.98625 W74.75317	0.82	0.116 J	14.1
		FS7-2302-WS	10/2/18	44.4	1104	N44.98672 W74.74926	2.5	0.223 J	8.9
		FS7-2303-WS	10/2/18	45.0	1020	N44.98632 W74.74470	1.1	0.0177 J	1.6
Downstream	Smallmouth bass	FS9-2246-SB	9/26/18	46.1	1520	N44.98801 W74.73879	3.5	0.460 J	13.1
		FS9-2268-SB	9/27/18	46.0	1566	N44.98818 W74.73790	1.7	0.394 J	23.2
		FS9-2269-SB	9/27/18	29.4	390	N44.98822 W74.73972	1.7	0.0926 J	5.4
		FS9-2270-SB	9/27/18	35.9	754	N44.98812 W74.73915	2.7	0.415 J	15.4
		FS9-2271-SB	9/27/18	25.0	240	N44.98826 W74.73968	2.0	0.119 J	6.0
		FS9-2306-SB	10/2/18	27.9	364	N44.98826 W74.73736	2.3	0.110 J	4.8
	White sucker	FS9-2272-WS	9/27/18	36.6	652	N44.98776 W74.74022	1.2	0.0137 J	1.1
		FS9-2273-WS	9/27/18	44.5	980	N44.98826 W74.73725	0.89	0.0287 J	3.2
		FS9-2274-WS	9/27/18	44.4	1156	N44.98723 W74.74156	1.5	0.124 J	8.3
		FS9-2275-WS	9/27/18	48.1	1282	N44.98717 W74.74180	1.6	0.237 J	14.8
		FS9-2276-WS	9/27/18	44.8	1112	N44.98840 W74.73553	1.9	0.250 J	13.2
		FS9-2277-WS	9/27/18	29.6	350	N44.98820 W74.73979	0.66	0.0145 J	2.2

Notes:

- Approximate sample collection locations are shown on Figures 2-1 and 2-2
- White sucker were collected as a substitute species due to limited availability of brown bullhead from the site and downstream locations. Both fish species were collected from the background location for representation.
- cm = centimeter
- g = gram
- mg/kg wet = milligrams per kilogram wet weight
- mg/kg-lipid = milligrams per kilogram lipid normalized; half the detection limit was used for calculating lipid-normalized PCB concentrations for non-detect sample
- J = the compound was positively identified; however, the associated numerical value is an estimated concentration
- U = non-detect; the value in parenthesis is the associated reporting limit

FIGURES

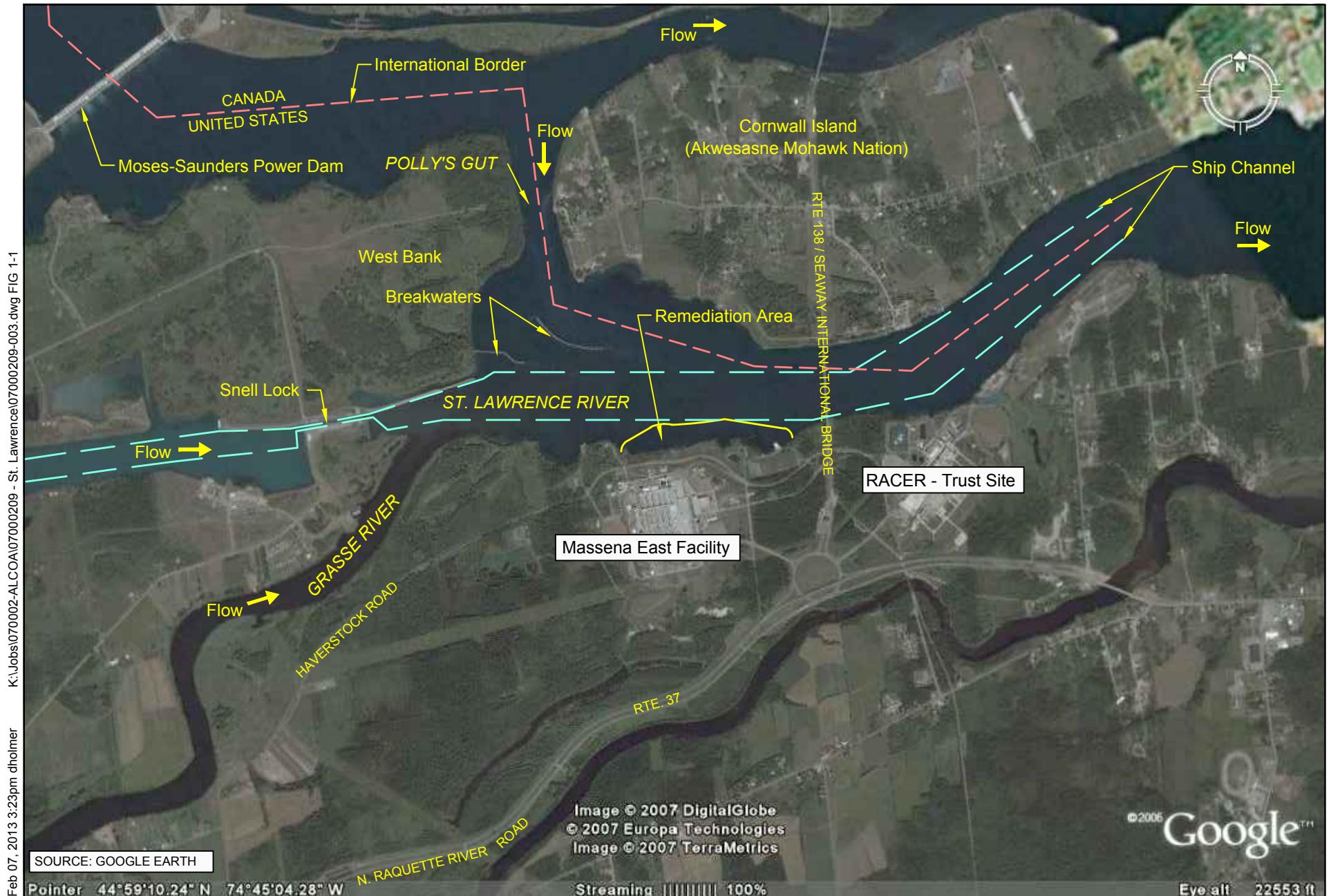
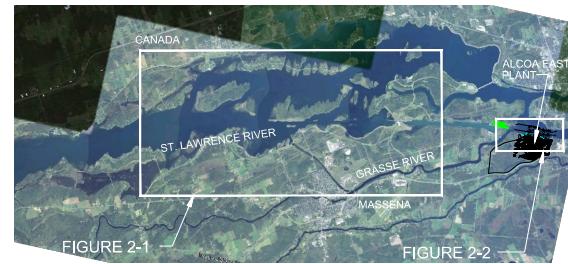
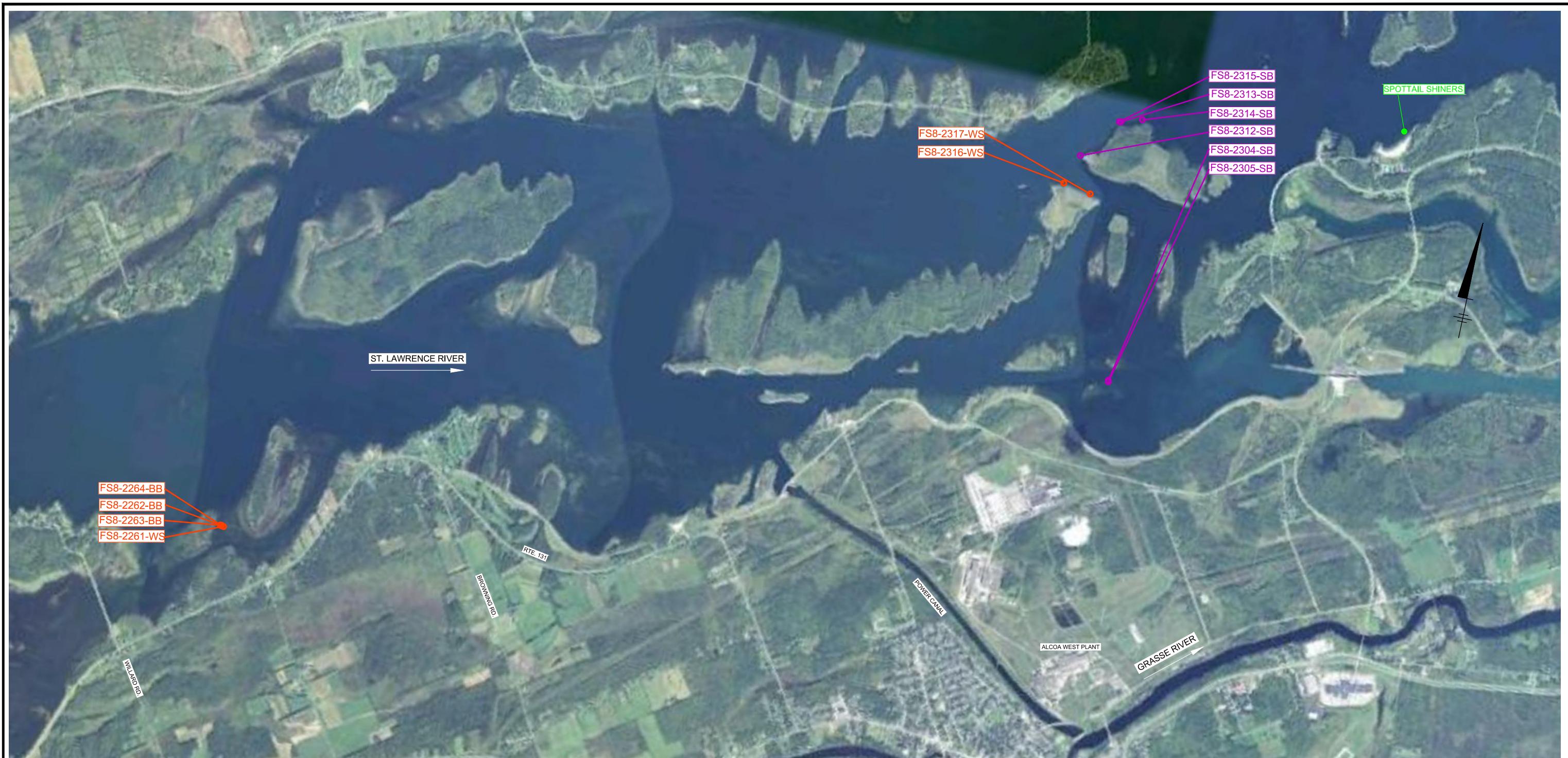


Figure 1-1
Site Overview Map
Long Term Monitoring Data Summary Report
St. Lawrence River Remediation Project



LEGEND:

- APPROXIMATE YOUNG-OF-YEAR SPOTTAIL SHINER MONITORING LOCATION
- APPROXIMATE 2018 ADULT FISH MONITORING LOCATIONS

FS8-2263-BB SAMPLE IDENTIFICATION NUMBER

FISH SPECIES ABBREVIATIONS:

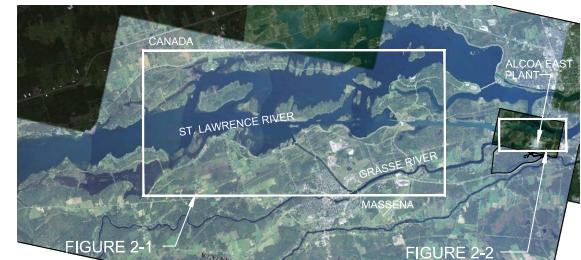
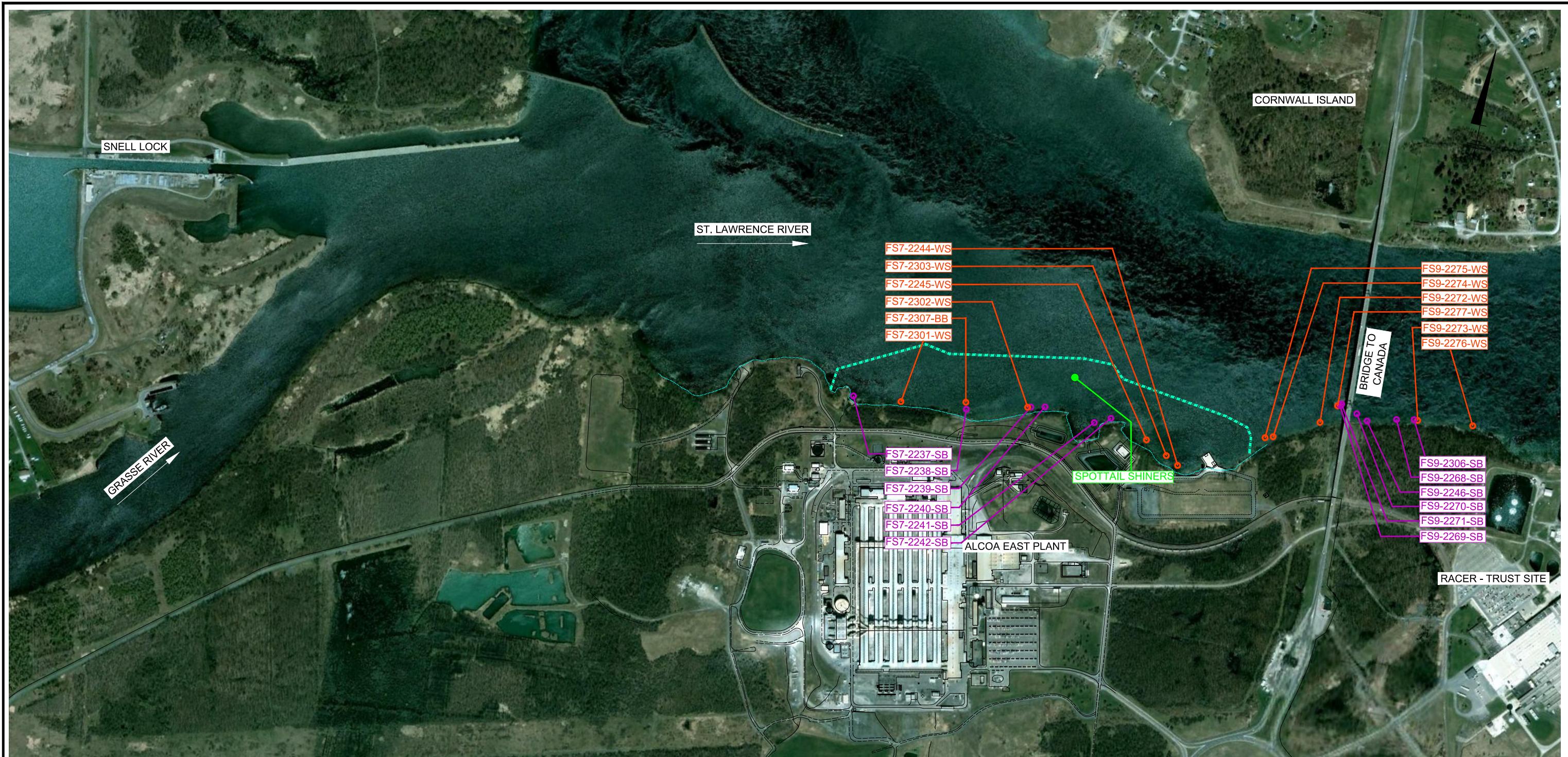
- | | |
|------|-----------------|
| SB = | SMALLMOUTH BASS |
| BB = | BROWN BULLHEAD |
| WS = | WHITE SUCKER |

NOTE:

1. AERIAL PHOTO OBTAINED FROM GOOGLE EARTH

ST. LAWRENCE RIVER REMEDIATION PROJECT
 MASSENA, NEW YORK
2018 LONG-TERM MONITORING DATA SUMMARY REPORT

FISH SAMPLE COLLECTION LOCATIONS - BACKGROUND



XREFS: PROJECTNAME: ---
 IMAGES: ---
 1/17/2019 2:04 PM BY STEINBERGER, GEORGE
 FSL-X-BASEMAP-X-AERIAL3.DWG
 FSL-X-TITLE FSL-X-AERIAL5.DWG
 FSL-X-AERIAL6.DWG
 ALCOA-X-LOGO.TIF

LEGEND:
 ● APPROXIMATE YOUNG-OF-YEAR SPOTTAIL SHINER MONITORING LOCATION
 ○ APPROXIMATE 2016 FISH MONITORING LOCATION
 FS7-2242-SB SAMPLE IDENTIFICATION NUMBER
 ----- 2001 SLRRP REMEDIATION AREA

FISH SPECIES ABBREVIATIONS:
 SB = SMALLMOUTH BASS
 BB = BROWN BULLHEAD
 WS = WHITE SUCKER

NOTES:
 1. AERIAL PHOTO OBTAINED FROM GOOGLE EARTH

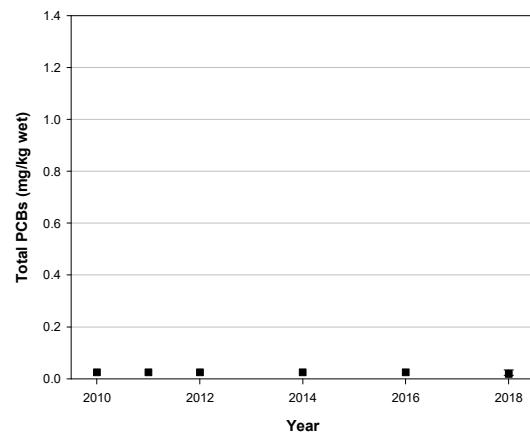
0 400' 800'
 GRAPHIC SCALE

ST. LAWRENCE RIVER REMEDIATION PROJECT MASSENA, NEW YORK 2018 LONG-TERM MONITORING DATA SUMMARY REPORT

FISH SAMPLE COLLECTION LOCATIONS - SITE AND DOWNSTREAM OF SITE

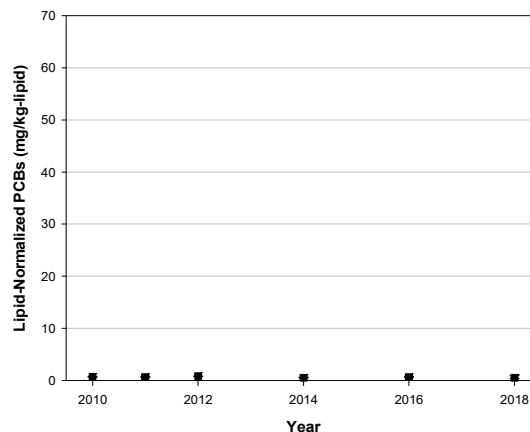
Total PCBs - Spottail Shiner

Background



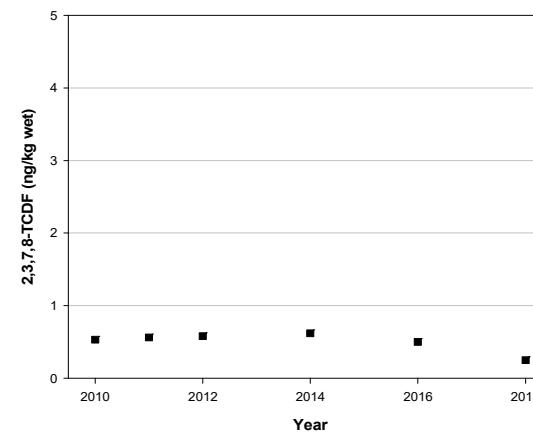
Lipid-Normalized PCBs - Spottail Shiner

Background

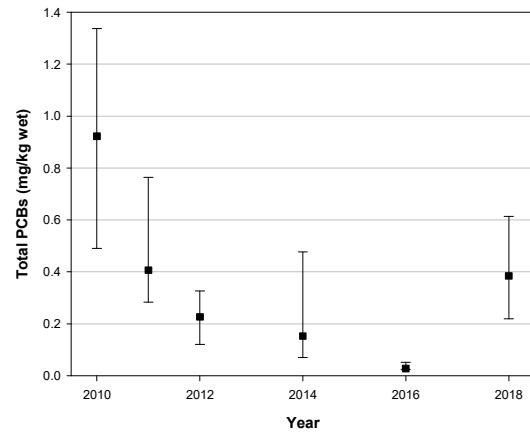


Dibenzofuran - Spottail Shiner

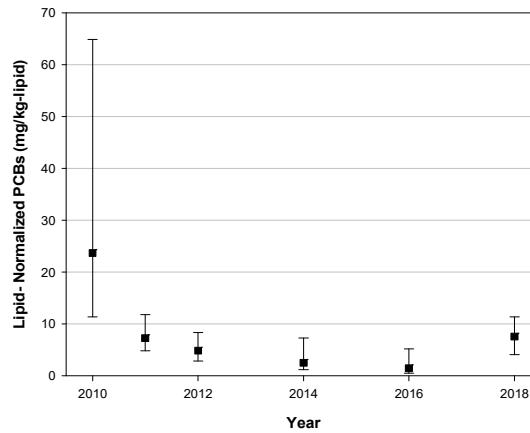
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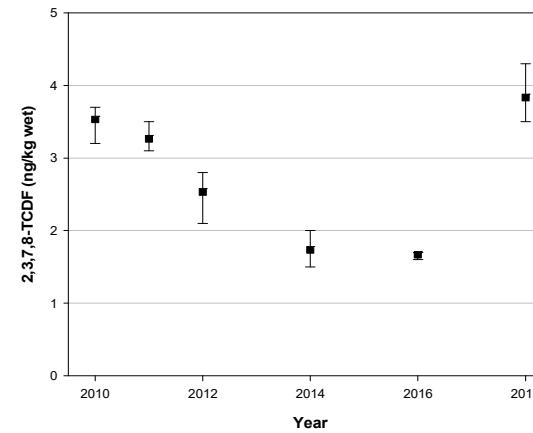
SLRRP Area



SLRRP Area



SLRRP Area



Notes:

1. Values represent the arithmetic average with minimum and maximum provided by the bars for each year.
2. Values below detection set to half the detection limit for determining the average.

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MASSENA, NEW YORK
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DATA SUMMARY REPORT

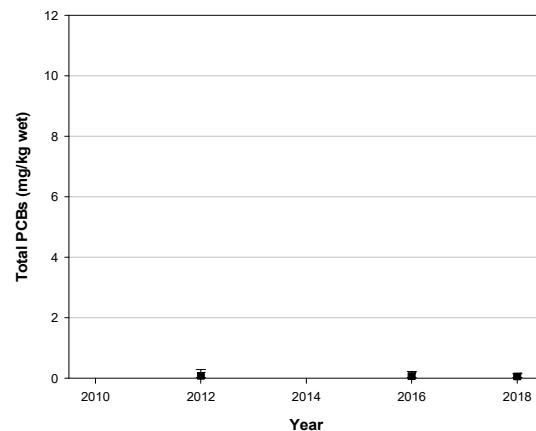
Spottail Shiner PCB and Dibenzofuran Results



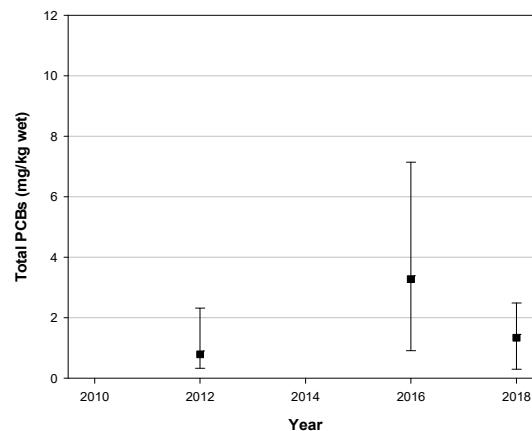
FIGURE
2-3

Total PCBs - Smallmouth Bass

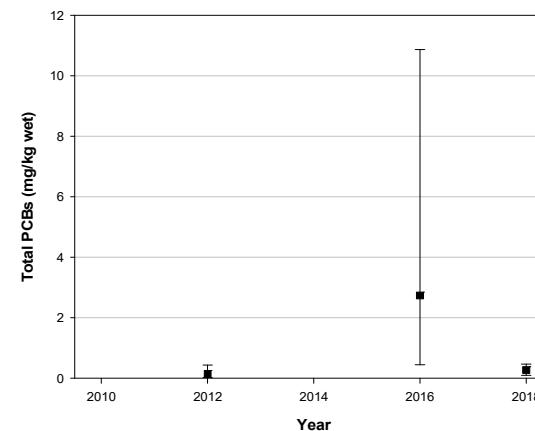
Background



SLRRP Area

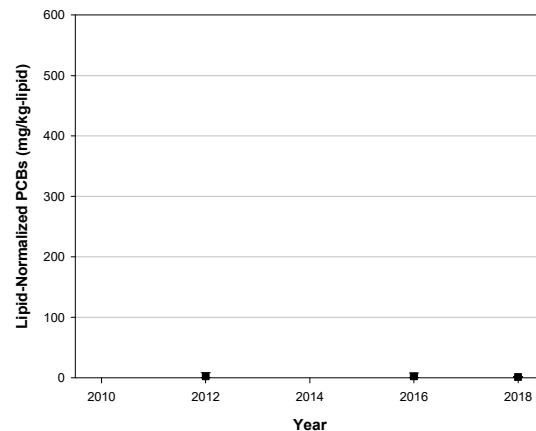


Downstream of Site

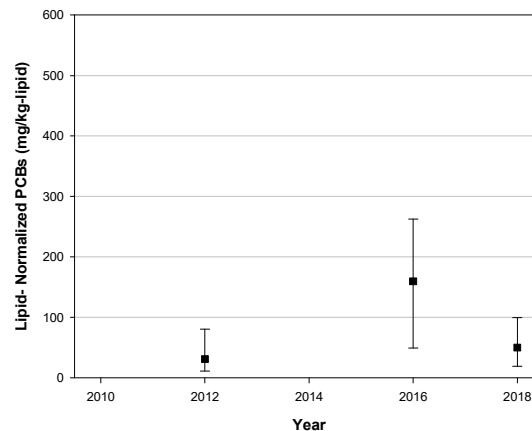


Lipid-Normalized PCBs - Smallmouth Bass

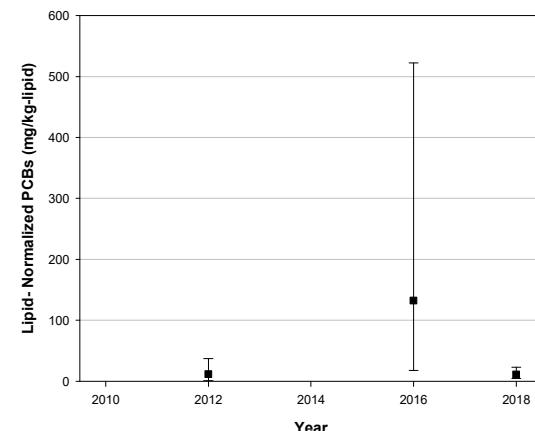
Background



SLRRP Area



Downstream of Site



Notes:

1. Values represent the arithmetic average with minimum and maximum provided by the bars for each year.
2. Values below detection set to half the detection limit for determining the average.

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Smallmouth Bass PCB Results

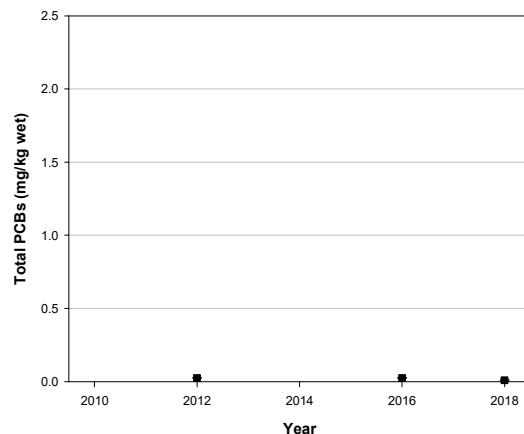


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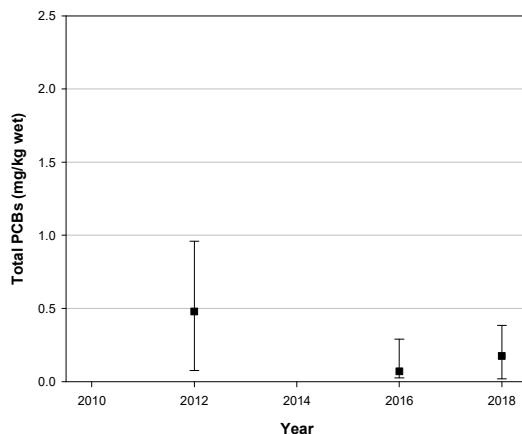
FIGURE
2-4

Total PCBs - Brown Bullhead

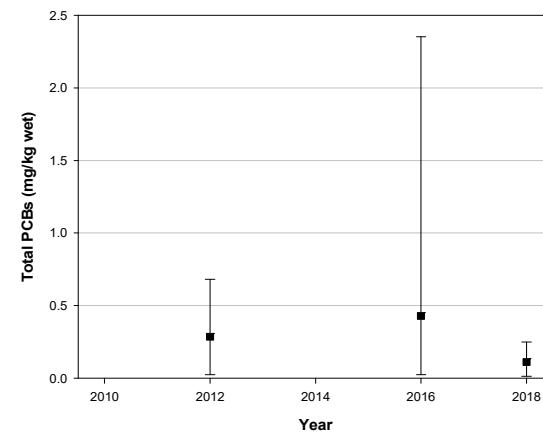
Background



SLRRP Area

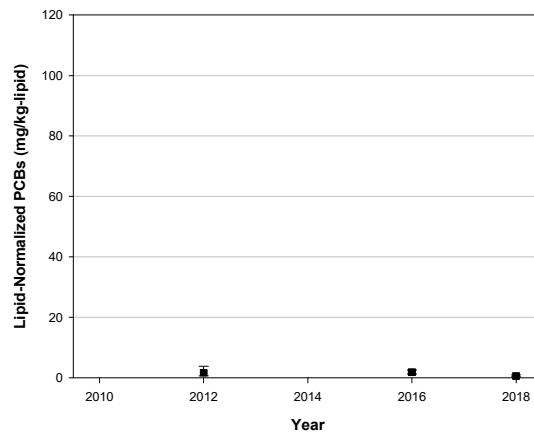


Downstream of Site

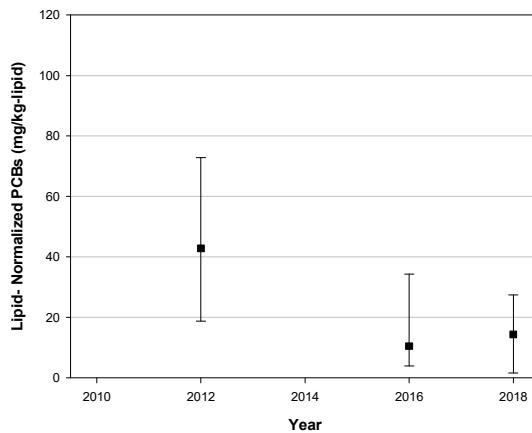


Lipid-Normalized PCBs - Brown Bullhead

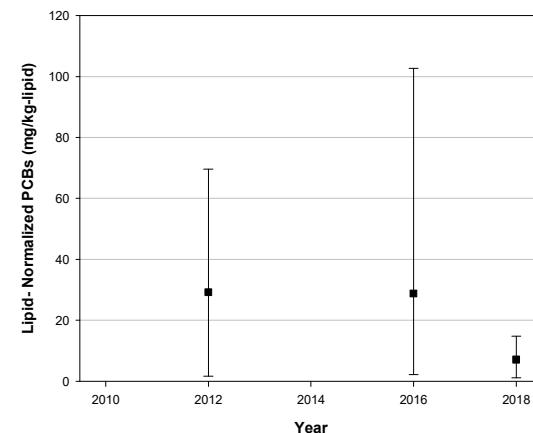
Background



SLRRP Area



Downstream of Site



Notes:

1. Values represent the arithmetic average with minimum and maximum provided by the bars for each year.
2. Values below detection set to half the detection limit for determining the average.
3. White sucker were collected as a substitute species when brown bullhead were unavailable.

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MASSENA, NEW YORK
2018 LONG-TERM MONITORING
DATA SUMMARY REPORT

Brown Bullhead PCB Results



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FIGURE
2-5

APPENDIX A

DATA VALIDATION REPORT

ALCOA MASSENA EAST

SLRRP Fish

DATA USABILITY SUMMARY REPORT (DUSR)

Massena, New York

Polychlorinated Biphenyl (PCB) and Polychloro-Dibenzofuran (PCDF) Analyses

SDGs #: 40177237 and 40177238

Analyses Performed By:
Pace Analytical Services, LLC
Green Bay, Wisconsin

Report #: 31471R
Review Level: Tier III
Project: B0010878.0005.00001

DATA USABILITY SUMMARY REPORT

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) 40177237 and 40177238 for samples collected in association with the Massena East site. The review was conducted as a Tier III evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the chain-of-custody records and validation-annotated sample result sheets. Analyses were performed on the following samples:

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	PCDF	MISC
40177237	FS7-2237-SB	40177237001	Tissue	9/26/2018				X		
	FS7-2238-SB	40177237002	Tissue	9/26/2018				X		
	FS7-2239-SB	40177237003	Tissue	9/26/2018				X		
	FS7-2240-SB	40177237004	Tissue	9/26/2018				X		
	FS7-2241-SB	40177237005	Tissue	9/26/2018				X		
	FS7-2242-SB	40177237006	Tissue	9/26/2018				X		
	FS7-2244-WS	40177237007	Tissue	9/26/2018				X		
	FS7-2245-WS	40177237008	Tissue	9/26/2018				X		
	FS9-2246-SB	40177237009	Tissue	9/26/2018				X		
	FS8-2261-WS	40177237010	Tissue	9/28/2018				X		
	FS8-2262-BB	40177237011	Tissue	9/28/2018				X		
	FS8-2263-BB	40177237012	Tissue	9/28/2018				X		
	FS8-2264-BB	40177237013	Tissue	9/28/2018				X		
	FS9-2268-SB	40177237014	Tissue	9/27/2018				X		
	FS9-2269-SB	40177237015	Tissue	9/27/2018				X		
	FS9-2270-SB	40177237016	Tissue	9/27/2018				X		
	FS9-2271-SB	40177237017	Tissue	9/27/2018				X		
	FS9-2272-WS	40177237018	Tissue	9/27/2018				X		
	FS9-2273-WS	40177237019	Tissue	9/27/2018				X		
	FS9-2274-WS	40177237020	Tissue	9/27/2018				X		
	FS9-2275-WS	40177237021	Tissue	9/27/2018				X		
	FS9-2276-WS	40177237022	Tissue	9/27/2018				X		
	FS9-2277-WS	40177237023	Tissue	9/27/2018				X		
	FS7-2301-WS	40177237024	Tissue	10/2/2018				X		
	FS7-2302-WS	40177237025	Tissue	10/2/2018				X		
	FS7-2303-WS	40177237026	Tissue	10/2/2018				X		
	FS8-2304-SB	40177237027	Tissue	10/2/2018				X		

DATA USABILITY SUMMARY REPORT

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	PCDF	MISC
40177237	FS8-2305-SB	40177237028	Tissue	10/2/2018				X		
	FS9-2306-SB	40177237029	Tissue	10/2/2018				X		
	FS7-2307-BB	40177237030	Tissue	10/3/2018				X		
	FS8-2312-SB	40177237031	Tissue	10/2/2018				X		
	FS8-2313-SB	40177237032	Tissue	10/2/2018				X		
	FS8-2314-SB	40177237033	Tissue	10/2/2018				X		
	FS8-2315-SB	40177237034	Tissue	10/2/2018				X		
	FS8-2316-WS	40177237035	Tissue	10/2/2018				X		
	FS8-2317-WS	40177237036	Tissue	10/2/2018				X		
40177238	FS7-2227-SS	40177238001	Tissue	9/26/2018				X		
	FS7-2228-SS	40177238002	Tissue	9/26/2018				X		
	FS7-2229-SS	40177238003	Tissue	9/26/2018				X		
	FS7-2230-SS	40177238004	Tissue	9/26/2018				X		
	FS7-2231-SS	40177238005	Tissue	9/26/2018				X		
	FS7-2232-SS	40177238006	Tissue	9/26/2018				X		
	FS7-2233-SS	40177238007	Tissue	9/26/2018				X		
	FS7-2234-SS	40177238008	Tissue	9/26/2018				X	X	
	FS7-2235-SS	40177238009	Tissue	9/26/2018				X	X	
	FS7-2236-SS	40177238010	Tissue	9/26/2018				X	X	
	FS8-2256-SS	40177238011	Tissue	9/27/2018				X		
	FS8-2257-SS	40177238012	Tissue	9/27/2018				X		
	FS8-2258-SS	40177238013	Tissue	9/27/2018				X		
	FS8-2259-SS	40177238014	Tissue	9/27/2018				X		
	FS8-2260-SS	40177238015	Tissue	9/27/2018				X	X	

DATA USABILITY SUMMARY REPORT

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

DATA USABILITY SUMMARY REPORT

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8082A and 8290. Data were reviewed in accordance with *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (October 1999) and *USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review* (April 2016).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
 - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
 - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
 - UB Compound considered non-detect at the listed value due to associated blank contamination.
 - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
 - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA USABILITY SUMMARY REPORT

POLYCHLORINATED BIPHENYLS (PCBs) as AROCLORS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082A	Tissue	One year from collection to extraction and 40 days from extraction to analysis	Frozen < -10 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the reporting limit (RL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Aroclors were not detected above the RL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. System Performance

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

All target analytes associated with the initial calibration standards must exhibit a relative standard deviation (RSD) less than the method-specified control limit of 20% or a correlation coefficient greater than 0.99. Multiple-point calibrations were performed for Aroclor 1016 and 1260 only. Single-point calibrations were performed for the remaining Aroclors.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%).

All calibration criteria were within the control limits.

DATA USABILITY SUMMARY REPORT

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. Aroclor PCB analysis requires that at least one of the two surrogate compounds (decachlorobiphenyl and tetrachloro-m-xylene) exhibit recoveries within the laboratory-established acceptance limits.

All sample analyses exhibited acceptable surrogate recoveries.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample FS7-2237-SB and a non-site-specific sample were used in the MS/MSD analyses. All analytes associated with the MS/MSD analyses exhibited acceptable recoveries and RPDs.

7. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS analysis must exhibit recoveries within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

8. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent and field duplicate sample results. In the case where the parent and duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of three times the RL is applied to the difference between the results for soil matrices.

Field duplicate samples were not collected as part of these SDGs.

9. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the RPD between the results from the two columns for detected sample results must be less than 25%.

Analytes exhibiting RPDs outside of the control limits for the associated sample locations are presented in the following table.

SDG	Sample	Analyte	RPD	Reported Result	Qualified Result
40177237	FS7-2237-SB	Aroclor 1248	53.9 %	44.8	44.8 J
		Aroclor 1254	42.3 %	112	112 J

DATA USABILITY SUMMARY REPORT

SDG	Sample	Analyte	RPD	Reported Result	Qualified Result
40177237	FS7-2238-SB	Aroclor 1248	53.9 %	735	735 J
		Aroclor 1254	35.1 %	760	760 J
		Aroclor 1260	27.1 %	748	748 J
	FS7-2239-SB	Aroclor 1248	46.1 %	1020	1020 J
		Aroclor 1254	35.8 %	769	769 J
	FS7-2240-SB	Aroclor 1248	53.6 %	231	231 J
		Aroclor 1254	32.5 %	286	286 J
	FS7-2241-SB	Aroclor 1248	51.7 %	552	552 J
		Aroclor 1254	31.5 %	573	573 J
	FS7-2242-SB	Aroclor 1248	51.2 %	103	103 J
		Aroclor 1254	27.6 %	143	143 J
	FS7-2245-WS	Aroclor 1242	46.2 %	137	137 J
		Aroclor 1254	42.4 %	118	118 J
	FS9-2246-SB	Aroclor 1248	32.1 %	110	110 J
		Aroclor 1254	57.1 %	157	157 J
	FS8-2264-BB	Aroclor 1254	78.4 %	14.4 J	25.0 U
	FS9-2268-SB	Aroclor 1248	56.9 %	68.0	68.0 J
		Aroclor 1254	32.5 %	157	157 J
	FS9-2269-SB	Aroclor 1248	57.9 %	22.9 J	25.0 U
		Aroclor 1254	59.9 %	40.6	40.6 J
	FS9-2270-SB	Aroclor 1248	70.8 %	124	124 JN
		Aroclor 1254	37.6 %	172	172 J
	FS9-2271-SB	Aroclor 1248	43.2 %	30.1	30.1 J
		Aroclor 1254	44.7 %	41.3	41.3 J
	FS9-2272-WS	Aroclor 1254	58.2 %	15.9 J	25.0 U
	FS9-2273-WS	Aroclor 1254	31.2 %	15.9 J	15.9 J
	FS9-2274-WS	Aroclor 1248	25.9 %	42.0	42.0 J
		Aroclor 1254	33.1 %	51.7	51.7 J
	FS9-2275-WS	Aroclor 1248	36.6 %	86.2	86.2 J
		Aroclor 1254	38.0 %	79.1	79.1 J
	FS9-2276-WS	Aroclor 1248	28.7 %	79.3	79.3 J
		Aroclor 1254	30.7 %	110	110 J
		Aroclor 1260	35.1 %	60.4	60.4 J
	FS7-2301-WS	Aroclor 1248	44.5 %	21.1 J	21.1 J
		Aroclor 1254	34.2 %	47.4	47.4 J
	FS7-2302-WS	Aroclor 1248	31.5 %	65.0	65.0 J
		Aroclor 1254	30.9 %	86.2	86.2 J
	FS7-2303-WS	Aroclor 1254	63.3 %	19.4 J	25.0 U
	FS8-2304-SB	Aroclor 1254	90.4 %	59.5	59.5 JN

DATA USABILITY SUMMARY REPORT

SDG	Sample	Analyte	RPD	Reported Result	Qualified Result
40177237	FS8-2305-SB	Aroclor 1254	85.1 %	44.7	44.7 JN
		Aroclor 1260	25.7 %	40.8	40.8 J
	FS9-2306-SB	Aroclor 1254	34.7 %	38.4	38.4 J
		Aroclor 1248	82.7 %	32.8	32.8 JN
	FS7-2307-BB	Aroclor 1248	46.3 %	69.1	69.1 J
		Aroclor 1254	80.9 %	22.5 J	25.1 U
	FS8-2312-SB	Aroclor 1254	87.7 %	15.2 J	24.9 U
	FS8-2313-SB	Aroclor 1254	88.1 %	13.8 J	25.1 U
	FS8-2314-SB	Aroclor 1254	82.8 %	13.6 J	25.0 U
	FS7-2227-SS	Aroclor 1242	47.3 %	91.1	91.1 J
		Aroclor 1260	39.4 %	82.8	82.8 J
	FS7-2228-SS	Aroclor 1242	53.8 %	92.0	92.0 J
		Aroclor 1260	38.2 %	101	101 J
40177238	FS7-2229-SS	Aroclor 1242	58.2 %	162	162 J
		Aroclor 1260	40.4 %	126	126 J
	FS7-2230-SS	Aroclor 1242	32.3 %	60.4	60.4 J
		Aroclor 1260	28.4 %	63.7	63.7 J
	FS7-2231-SS	Aroclor 1242	59.3 %	129	129 J
		Aroclor 1260	40.4 %	107	107 J
	FS7-2232-SS	Aroclor 1242	45.8 %	66.0	66.0 J
		Aroclor 1260	28.4 %	62.8	62.8 J
	FS7-2233-SS	Aroclor 1242	65.5 %	158	158 J
		Aroclor 1260	35.8 %	183	183 J
	FS7-2234-SS	Aroclor 1242	46.2 %	109	109 J
		Aroclor 1260	34.6 %	94.8	94.8 J
	FS7-2235-SS	Aroclor 1242	45.3 %	79.6	79.6 J
		Aroclor 1260	32.4 %	78.8	78.8 J
	FS7-2236-SS	Aroclor 1242	62.7 %	132	132 J
		Aroclor 1260	39.8 %	143	143 J
40177239	FS8-2256-SS	Aroclor 1254	60.5 %	15.2 J	25.1 U
		Aroclor 1260	31.4 %	17.4 J	17.4 J
	FS8-2257-SS	Aroclor 1254	44.8 %	14.8 J	14.8 J
	FS8-2258-SS	Aroclor 1254	45.3 %	17.8 J	17.8 J
		Aroclor 1260	31.5 %	16.3 J	16.3 J
	FS8-2259-SS	Aroclor 1254	48.0 %	13.7 J	13.7 J
	FS8-2260-SS	Aroclor 1254	51.7 %	17.1 J	25.0 U
		Aroclor 1260	41.5 %	13.6 J	13.6 J

The criteria used to evaluate the RPDs are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

DATA USABILITY SUMMARY REPORT

Control Limit (RPD)	Qualification
25% to 70%	J
70% to 100%	JN
> 100% ¹	R
> 100% to 200% (Interference detected) ²	J or JN
> 50% (PCB sample results less than the RL) ³	U

Note 1: If the pattern is confirmed sample results will be qualified as estimated (J). If pattern exhibits interference or if the PCB cannot be positively determined due to weathering the sample results will be qualified as tentative identification estimate (JN).

Note 2: If interference is detected in either column the sample results will be qualified as tentative identification estimate (JN).

Note 3: When the PCB sample result is less than the RL and the RPD is greater than 50%, the sample result is raised to the RL and reported as non-detect.

The total PCB results were qualified as estimated (J) where at least 50% of the calculated concentration are from Aroclors qualified as estimated (J or JN) in the prior table.

The total PCB results were recalculated for those samples with Aroclors qualified as non-detects (U) above. The total PCB results were recalculated for the following samples.

SDG	Sample	Analyte	Reported Result	Recalculated Result
40177237	FS8-2264-BB	Total PCBs	14.4 J	25.0 U
	FS9-2269-SB	Total PCBs	116	92.6
	FS9-2272-WS	Total PCBs	29.6	13.7 J
	FS7-2303-WS	Total PCBs	37.1	17.7 J
	FS8-2312-SB	Total PCBs	43.8	21.4 J
	FS8-2313-SB	Total PCBs	32.9	17.7 J
	FS8-2314-SB	Total PCBs	29.1	15.2 J
	FS8-2315-SB	Total PCBs	27.2	13.5 J
40177238	FS8-2256-SS	Total PCBs	32.5	17.4 J
	FS8-2260-SS	Total PCBs	30.7	13.6 J

10. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA USABILITY SUMMARY REPORT

DATA VALIDATION CHECKLIST FOR PCBs as AROCLORs

PCBs as Aroclors: SW-846 8082A	Reported		Performance Acceptable		Not Required	
	No	Yes	No	Yes		
Gas Chromatography/Electron Capture Detector (GC/ECD)						
Tier II Validation						
Holding Times		X		X		
Reporting Limits (Units)		X		X		
Blanks						
A. Method Blanks		X		X		
B. Equipment and/or Field Blanks	X				X	
Surrogate %R		X		X		
Matrix Spike (MS) %R		X		X		
Matrix Spike Duplicate (MSD) %R		X		X		
MS/MSD Precision (RPD)		X		X		
Laboratory Control Sample (LCS) %R		X		X		
Laboratory Control Sample Duplicate (LCSD) %R	X				X	
LCS/LCSD Precision (RPD)	X				X	
Laboratory Duplicate (RPD)	X				X	
Field Duplicate (RPD)	X				X	
Column (RPD) (If dual column is performed-not confirmation purposes only)		X	X			
Dilution Factor		X		X		
Lipid Content		X		X		
Tier III Validation						
Initial Calibration %RSDs		X		X		
Continuing Calibration %Ds		X		X		
System Performance and Column Resolution		X		X		
Compound Identification and Quantitation						
A. Quantitation Reports		X		X		
B. RT of sample compounds within the established RT windows		X		X		
C. Pattern identification		X		X		
D. Transcription/calculation errors present		X		X		
E. Reporting limits adjusted to reflect sample dilutions		X		X		

%RSD – relative standard deviation

%R - percent recovery

RPD - relative percent difference

%D – difference

DATA USABILITY SUMMARY REPORT

POLYCHLORINATED DIBENZOFURANS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
PCDD/PCDF by SW-846 8290	Tissue	One year from collection to extraction and 45 days from extraction to analysis	Freeze to < -10 °C

All samples were extracted and analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the MDL. The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target compounds were not detected above the MDL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. Mass Spectrometer Tuning and Chromatographic Resolution

At the beginning and end of each 12-hour QC period a >10,000 resolving power of the selected ion current profile (SICP) of each compound must be demonstrated as specified in table 9 of the analytical method. Additionally, the chromatographic peak separation between the 13C12-2,3,7,8-TCDD peak and the 13C12-1,2,3,4-TCDD peak must be resolved with a valley of no greater than 25 percent, measured on the SICP for each compound.

The mass spectrometer performance including instrument sensitivity and mass resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

All compounds associated with the initial calibration standards must exhibit signal-to-noise ratios (S/N) of at least 2.5, isotopic ratios (m/z) within the limits listed in table 9 of the method, and percent relative standard deviations (%RSDs) of the relative response factors (RRFs) less than 20% for the labeled standards and target compounds.

DATA USABILITY SUMMARY REPORT

4.2 Continuing Calibration

Instrument performance must be verified at 12-hour periods after successful tune verifications. All compounds associated with the continuing calibration standard must exhibit S/N ratios of at least 2.5, isotopic ratios within the limits listed in table 9 of the method, and percent differences (%D) of the RRFs must be no greater than +/- 20% for the target compounds and +/- 30% for the labeled standards.

All initial and continuing calibration criteria were within the control limits.

5. Internal Standard Performance (Labeled Compounds)

All samples to be analyzed for PCDD/PCDF compounds are spiked with labeled internal standards prior to extraction to ensure that the GC/MS sensitivity and response are stable during sample analysis. The acceptance criteria require that the labeled internal standard compounds exhibit S/N ratios of at least 10 and elute within \pm 15 seconds of the retention times (RTs) established during calibration. The labeled internal standards must exhibit m/z ratios within the method specified control limits (table 9) and recoveries within the method-specified limits of 25%-150%.

All internal standard recoveries were within established limits.

6. Matrix Spike/Matrix Spike Duplicate Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The RPD between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

The MS/MSD analysis was not performed using a sample from within these SDGs.

7. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS/LCSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the LCS and LCSD results must be within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analyses exhibited recoveries and RPDs within the control limits.

8. Field Duplicate Analysis

The field duplicate sample analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 25% for water matrices or 50% for soil and sediment matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and duplicate sample concentrations are less than five times the RL, a control limit of two times the RL for water matrices or three times the RL for soil and sediment matrices is applied to the difference between the results.

Field duplicate samples were not collected for these SDGs.

DATA USABILITY SUMMARY REPORT

9. Compound Identification

PCDDs and PCDFs are identified by using the compound's ion abundance (m/z) ratios, signal-to-noise values, relative retention times, and the co-maximization criterion (the two quantitation ion peaks must reach their maxima within two seconds of each other). If a peak does not meet the qualitative identification criteria (most commonly the ion abundance ratio criteria), the quantitative result for that congener is reported as an estimated maximum possible concentration (EMPC). Therefore, the EMPC qualification is an estimated concentration of the chromatographic peak quantitated as if the identification criteria were met. This value should be considered an elevated detection limit based on potential compound identification and quantitation interference.

No EMPCs were reported.

10. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA USABILITY SUMMARY REPORT

DATA VALIDATION CHECKLIST FOR PCDD/PCDF

PCDD/PCDF: SW-846 8290	Reported		Performance Acceptable		Not Required	
	No	Yes	No	Yes		
Gas Chromatography/Mass Spectrometry (GC/MS)						
Tier II Validation						
Holding times		X		X		
Reporting limits (units)		X		X		
Blanks						
A. Method blanks		X		X		
B. Equipment and/or Field blanks	X				X	
Labelled Internal Standard %R		X		X		
Matrix Spike %R	X				X	
Matrix Spike Duplicate %R	X				X	
MS/MSD Precision RPD	X				X	
Laboratory Control Sample Accuracy (%R)		X		X		
Laboratory Control Sample Duplicate %R		X		X		
LCS/LCSD RPD		X		X		
Laboratory Duplicate Sample RPD	X				X	
Field Duplicate Sample RPD	X				X	
Dilution Factor		X		X		
Lipid Content		X		X		
Tier III Validation						
System Performance and Column Resolution		X		X		
Initial Calibration %RSDs & RRFs		X		X		
Continuing Calibration %Ds & RRFs		X		X		
Instrument Tune and Performance Check		X		X		
Ion Abundance Criteria for Each Instrument Used		X		X		
Compound Identification and Quantitation						
A. Reconstructed Ion Chromatograms		X		X		
B. Quantitation Reports		X		X		
C. RT of Sample Compounds Within the Established RT Windows		X		X		
D. Quantitation transcriptions/calculations		X		X		
E. Reporting Limits Adjusted for Sample Dilutions		X		X		

%R = Percent Recovery

RPD = Relative Percent Difference

%RSD = Relative Standard Deviation

%D = Percent Difference

DATA USABILITY SUMMARY REPORT

SAMPLE COMPLIANCE REPORT

DATA USABILITY SUMMARY REPORT

SAMPLE COMPLIANCE REPORT

SDG	Sampling Date	Protocol	Sample ID	Matrix	Compliance ¹					Noncompliance
					VOC	SVOC	PCB	PCDF	MISC	
40177237	9/26/2018	SW-846	FS7-2237-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2238-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2239-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2240-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2241-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2242-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2244-WS	Tissue	--	--	Yes	--	--	
	9/26/2018		FS7-2245-WS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/26/2018		FS9-2246-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/28/2018		FS8-2261-WS	Tissue	--	--	Yes	--	--	
	9/28/2018		FS8-2262-BB	Tissue	--	--	Yes	--	--	
	9/28/2018		FS8-2263-BB	Tissue	--	--	Yes	--	--	
	9/28/2018		FS8-2264-BB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS9-2268-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS9-2269-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS9-2270-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS9-2271-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS9-2272-WS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS9-2273-WS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS9-2274-WS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS9-2275-WS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS9-2276-WS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS9-2277-WS	Tissue	--	--	Yes	--	--	
	10/2/2018		FS7-2301-WS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	10/2/2018		FS7-2302-WS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	10/2/2018		FS7-2303-WS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	10/2/2018		FS8-2304-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL

DATA USABILITY SUMMARY REPORT

SDG	Sampling Date	Protocol	Sample ID	Matrix	Compliance ¹					Noncompliance
					VOC	SVOC	PCB	PCDF	MISC	
40177237	10/2/2018	SW-846	FS8-2305-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	10/2/2018		FS9-2306-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	10/3/2018		FS7-2307-BB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	10/2/2018		FS8-2312-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	10/2/2018		FS8-2313-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	10/2/2018		FS8-2314-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	10/2/2018		FS8-2315-SB	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	10/2/2018		FS8-2316-WS	Tissue	--	--	Yes	--	--	
	10/2/2018		FS8-2317-WS	Tissue	--	--	Yes	--	--	
	9/26/2018		FS7-2227-SS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
40177238	9/26/2018		FS7-2228-SS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2229-SS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2230-SS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2231-SS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2232-SS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2233-SS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2234-SS	Tissue	--	--	No	Yes	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2235-SS	Tissue	--	--	No	Yes	--	PCBs: Dual column RPD > CL
	9/26/2018		FS7-2236-SS	Tissue	--	--	No	Yes	--	PCBs: Dual column RPD > CL
	9/27/2018		FS8-2256-SS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS8-2257-SS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS8-2258-SS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS8-2259-SS	Tissue	--	--	No	--	--	PCBs: Dual column RPD > CL
	9/27/2018		FS8-2260-SS	Tissue	--	--	No	Yes	--	PCBs: Dual column RPD > CL

Note:

- 1 Samples which are compliant with no added validation qualifiers are listed as "yes". Samples which are non-compliant or have added qualifiers are listed as "no". A "no" designation does not necessarily indicate that the data have been rejected or are otherwise unusable.

DATA USABILITY SUMMARY REPORT

Validation Performed By: Dennis Dyke

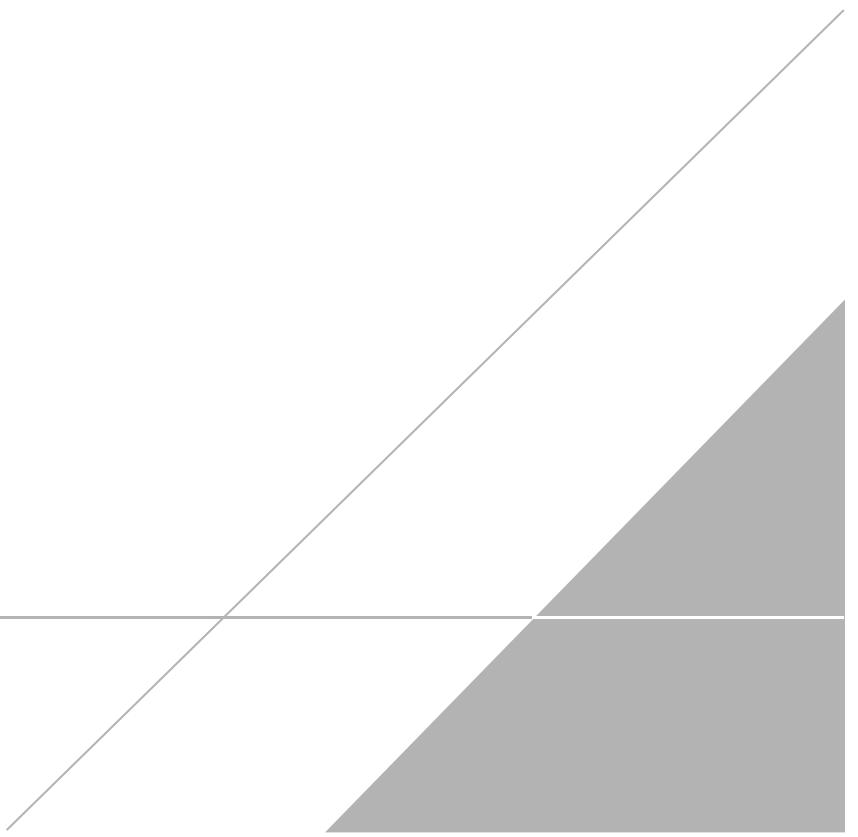
Signature: 

Date: January 16, 2019

Peer Review: Todd Church

Date: January 22, 2019

CHAIN OF CUSTODY AND CORRECTED SAMPLE ANALYSIS DATA SHEETS



**CHAIN OF CUSTODY & LABORATORY
ANALYSIS REQUEST FORM**
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40177237
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Contact & Company Name:

Dave Buys Arcadis
 Address: **110 W. Fayette St.**
 City: **Syracuse NY** State: **NY**
 Zip: **13202**

Send Results to:

Telephone: **315-263-6192**
 Filtered: **ice**
 # of Containers: **1** Per Sample
 Container Information:
 A. **Alumina**
 B. **Filter**
 C. **Freeze**
 D. **Nichrome**
 E. **HNO3**
 F. **Other**

Project Name/City/State:

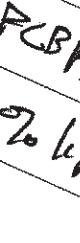
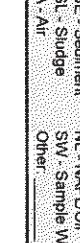
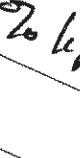
2013 SARP Fish

Sample Printed Name:
Alca East
 Project #: **Ko10878**
 Sampler's Signature: 

PARA
METER
ANALY
S & M
ETHOD

Sample ID	Date	Time	Comp	Grab	Collection	Type (✓)	Matrix	Preservation Key:								
								A. H ₂ O ₂	B. HCl	C. HNO ₃	D. NaOH	E. None	F. Other	G. Other	H. Other	
001	F57-2237-SB	9/26/18 1030	X	Beta	X	X										
002	2238															
003	2239															
004	2240															
005	2241															
006	2242															
007	F57-2243-W5	9/26/18 2300														
008	F57-2245															
009	F58-2261-WS	9/28/18 2200 2115														
010	F58-2262-BB															
011	2263															
012	2264															

REMARKS									
Fillet adult fish fillets NYDEC standard fillet surface. Analyze fillets for PCB bioconcentrated percent lipid as previously done and in accordance with the work plan.									

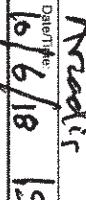
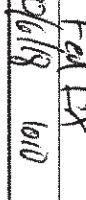
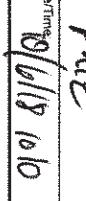
Laboratory Information and Receipt:									
Printed Name: Dave Buys Signature: 	Printed Name: Sam Minkin Signature: 	Printed Name: Fed Ex Firm/Counter: 	Date/Time: 9/6/18 10:00 Date/Time: 9/6/18 10:10	Printed Name: Fed Ex Firm/Counter: 	Date/Time: 9/6/18 10:00 Date/Time: 9/6/18 10:10	Printed Name: Alca East Firm: 	Printed Name: Alca East Firm: 	Printed Name: Alca East Firm: 	Printed Name: Alca East Firm: 

Special Instructions/Comments:

(MS/MD etc) of 1/20 Sample

Special QA/QC Instructions(✓):

Identify fish species/gex
 Send bass and white sucker
 heads back in labeled
 ziplock bags on ice. Notify
 Dave Buys first.
 Ziptop bags are provided

Laboratory Information and Receipt:	Refrigerated By:		Relinquished By:		Laboratory Received By:	
Printed Name: Pace Analytical Signature: 	Printed Name: Dave Buys Signature: 	Printed Name: Fed Ex Firm/Counter: 	Printed Name: Sam Minkin Signature: 	Printed Name: Fed Ex Firm/Counter: 	Printed Name: Alca East Firm: 	
Cooler/Cooler packed with ice Specify Temperature Requirements	<input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact		<input type="checkbox"/> Sample Receipt: Dave Buys 		<input type="checkbox"/> Condition/Cooler Temp: 43,55,11 Fed Ex 	
Dating tracking #:						
Distribution:	WHITE - Laboratory returns with results		YELLOW - Lab copy		PINK - Retained by Arcadis	

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 2 of 3

Lab Work Order #
40177237

57 of 61

Contract & Company Name: Dave Buys Arcadis	Telephone: 315-263-6192
Address: 110 W. Fayette St.	Fax:
City: Syracuse	State: NY
Zip:	E-mail Address:
Project Name/Location (City, State): 2018 SLRR Fish Sampling	
Sample Preparer: Matt Frankelton	
Preservative: ice	
Filtered (<input checked="" type="checkbox"/>): —	
# of Containers: 1 (per sample)	
Container Information: Vacuum foil and frozen paper	

Preservation Key:	Container Information Key:
A. H ₂ SO ₄	1. 40 ml Vial
B. HCl	2. 1 L Amber
C. HNO ₃	3. 250 ml Plastic
D. NaOH	4. 500 ml Plastic
E. None	5. Encore
F. Other:	6. 2 oz Glass
G. Other:	7. 4 oz Glass
H. Other:	8. 8 oz Glass
	9. Other:
	10. Other:

Matrix Key:
SO - Soil
SE - Sediment
W - Water
SI - Sludge
T - Tissue
A - Air
Other

Project Name/Location (City, State): 2018 SLRR Fish Sampling
Sample Preparer: Matt Frankelton
Preservative: ice
Filtered (<input checked="" type="checkbox"/>): —
of Containers: 1 (per sample)
Container Information: Vacuum foil and frozen paper

Collection Date: 10/27/18
Time: 14:30
Comp: X
Grab: X
Type (' <i>v</i>): Bifra
Matrix: lipids

See page 1

REMARKS

015 016 017 018 020 021 022 023 024 025 026 027 028	F59-2268-SB 2269 2270 2271 2272-W5 2273 2274 2275 2276 2277 F57-2301-WS 2302 2303 F58-2304-SB	9/27/18 14:30 10/2/18 21:30 10/2/18 21:30	X X X X X X X X X X X X X X
---	--	--	--

Special Instructions/Comments:
 Special QA/QC Instructions('v'):
2305 **2305** **2305** **2305** **2305** **2305** **2305** **2305** **2305** **2305** **2305** **2305** **2305** **2305**

Laboratory Information and Receipt	Relinquished By	Received By	Reliinquished By	Laboratory Received By
Cooler Custody Seal ('v') <input checked="" type="checkbox"/>	Printed Name: Dave Buys	Printed Name: John Malosa	Signature: 	Printed Name: John Malosa
Intact <input checked="" type="checkbox"/>	Signature: 	Signature: 	Signature: 	Signature: 
Specify Turnaround Requirements	Firm: Arcadis	FirmCourier: FedEx	Date/Time: 10/6/18 10:00	Date/Time: 10/6/18 10:00
Shipping Tracking #	PINK – Retained by Arcadis			

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 2 of 3

Lab Work Order #	40177237
Page	58 of 61

Contact & Company Name: Dave Buys Arcadis	Telephone: 315-263-6192
Address: How. Fayette St.	Fax:
City: Syracuse	State: NY
Zip:	E-mail Address:
Project Name/Location (CIV. STATE): 2018 SURP Sampling Box 10878	
Sample's Printed Name: Matt Trackett	
Sample's Sample ID: 2018 SURP Sampling Box 10878	

Preservative		ice
# of Containers		1
Container Information		Par sample aluminum foil and freezer bag
PARAMETER ANALYSIS & METHOD		

Sample ID	Date	Time	Comp	Grab	Type (^)	Matrix
F59 - 2306-SB	12/10/2015				Biotite	X
F57 - 2307-BB	2400					X
F58 - 2312-SB	1945					
2313						
2314						
2315						
F58 - 2316-WS						
2317						

**PCB Analysis
no lipids**

Separate

REMARKS

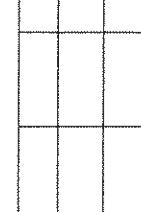
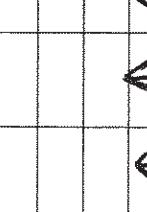
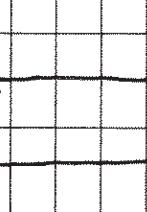
**SO - Soil
W - Water
SL - Sludge
A - Air
T - Tissue
SE - Sediment
SW - Sample Wipe
NL - NAPL/Oil
Other:**

10 Other

029	030	031	032	033	034	035	036
F59 - 2306-SB	F57 - 2307-BB	F58 - 2312-SB		2313	2314	2315	F58 - 2316-WS
12/10/2015	2400	1945					
X	X	X					

Special Instructions/Comments:

Special QA/QC Instructions(✓):

Laboratory Information and Receipt	Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Seepage	Printed Name: Dave Buys	Printed Name: Sue Madsen	Printed Name: Sue Madsen	
Cooler/Custody Seal (✓) <input checked="" type="checkbox"/> Cooler packed with ice (✓)	Intact <input checked="" type="checkbox"/>	Not Intact <input type="checkbox"/>		
Sample Receipt	Signature: 	Signature: 	Signature: 	
Specify Turnaround Requirements	Firm: Arcadis	Firm/Courier: Fed Ex	Date/Time: 10/16/18 1500	Date/Time: 10/16/18 1610
Shipping Tracking #	Condition/Cooler Temp: 43.5.51	Date/Time: 10/16/18 1500	Date/Time: 10/16/18 1610	

ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS7-2237-SB Lab ID: 40177237001 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/01/18 23:25	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/01/18 23:25	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/01/18 23:25	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/01/18 23:25	53469-21-9	
PCB-1248 (Aroclor 1248)	44.8	ug/kg	25.0	12.5	1	10/30/18 08:08	11/01/18 23:25	12672-29-6	J
PCB-1254 (Aroclor 1254)	112	ug/kg	25.0	12.5	1	10/30/18 08:08	11/01/18 23:25	11097-69-1	J
PCB-1260 (Aroclor 1260)	135	ug/kg	25.0	12.5	1	10/30/18 08:08	11/01/18 23:25	11096-82-5	
PCB, Total	292	ug/kg	25.0	12.5	1	10/30/18 08:08	11/01/18 23:25	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	82	%	61-120		1	10/30/18 08:08	11/01/18 23:25	877-09-8	
Decachlorobiphenyl (S)	82	%	63-113		1	10/30/18 08:08	11/01/18 23:25	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male					1	10/29/18 14:01		
Lipid	Analytical Method: Pace Lipid								
Lipid	0.96	%				1	10/31/18 10:54		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS7-2238-SB Lab ID: 40177237002 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<50.0	ug/kg	100	50.0	4	10/30/18 08:08	11/01/18 23:43	12674-11-2	
PCB-1221 (Aroclor 1221)	<50.0	ug/kg	100	50.0	4	10/30/18 08:08	11/01/18 23:43	11104-28-2	
PCB-1232 (Aroclor 1232)	<50.0	ug/kg	100	50.0	4	10/30/18 08:08	11/01/18 23:43	11141-16-5	
PCB-1242 (Aroclor 1242)	<50.0	ug/kg	100	50.0	4	10/30/18 08:08	11/01/18 23:43	53469-21-9	
PCB-1248 (Aroclor 1248)	735	ug/kg	100	50.0	4	10/30/18 08:08	11/01/18 23:43	12672-29-6	J
PCB-1254 (Aroclor 1254)	760	ug/kg	100	50.0	4	10/30/18 08:08	11/01/18 23:43	11097-69-1	J
PCB-1260 (Aroclor 1260)	748	ug/kg	100	50.0	4	10/30/18 08:08	11/01/18 23:43	11096-82-5	J
PCB, Total	2240	ug/kg	100	50.0	4	10/30/18 08:08	11/01/18 23:43	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	83	%	61-120		4	10/30/18 08:08	11/01/18 23:43	877-09-8	
Decachlorobiphenyl (S)	86	%	63-113		4	10/30/18 08:08	11/01/18 23:43	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1	10/29/18 14:01			
Lipid	Analytical Method: Pace Lipid								
Lipid	3.5	%			1	10/31/18 10:54			

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS7-2239-SB Lab ID: 40177237003 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<62.5	ug/kg	125	62.5	5	10/30/18 08:08	11/02/18 00:01	12674-11-2	
PCB-1221 (Aroclor 1221)	<62.5	ug/kg	125	62.5	5	10/30/18 08:08	11/02/18 00:01	11104-28-2	
PCB-1232 (Aroclor 1232)	<62.5	ug/kg	125	62.5	5	10/30/18 08:08	11/02/18 00:01	11141-16-5	
PCB-1242 (Aroclor 1242)	<62.5	ug/kg	125	62.5	5	10/30/18 08:08	11/02/18 00:01	53469-21-9	
PCB-1248 (Aroclor 1248)	1020	ug/kg	125	62.5	5	10/30/18 08:08	11/02/18 00:01	12672-29-6	J
PCB-1254 (Aroclor 1254)	769	ug/kg	125	62.5	5	10/30/18 08:08	11/02/18 00:01	11097-69-1	J
PCB-1260 (Aroclor 1260)	709	ug/kg	125	62.5	5	10/30/18 08:08	11/02/18 00:01	11096-82-5	
PCB, Total	2490	ug/kg	125	62.5	5	10/30/18 08:08	11/02/18 00:01	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	85	%	61-120		5	10/30/18 08:08	11/02/18 00:01	877-09-8	
Decachlorobiphenyl (S)	84	%	63-113		5	10/30/18 08:08	11/02/18 00:01	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Female				1		10/29/18 14:01		
Lipid	Analytical Method: Pace Lipid								
Lipid	2.5	%			1		10/31/18 10:55		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS7-2240-SB Lab ID: 40177237004 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<25.0	ug/kg	50.0	25.0	2	10/30/18 08:08	11/02/18 00:20	12674-11-2	
PCB-1221 (Aroclor 1221)	<25.0	ug/kg	50.0	25.0	2	10/30/18 08:08	11/02/18 00:20	11104-28-2	
PCB-1232 (Aroclor 1232)	<25.0	ug/kg	50.0	25.0	2	10/30/18 08:08	11/02/18 00:20	11141-16-5	
PCB-1242 (Aroclor 1242)	<25.0	ug/kg	50.0	25.0	2	10/30/18 08:08	11/02/18 00:20	53469-21-9	
PCB-1248 (Aroclor 1248)	231	ug/kg	50.0	25.0	2	10/30/18 08:08	11/02/18 00:20	12672-29-6	J
PCB-1254 (Aroclor 1254)	286	ug/kg	50.0	25.0	2	10/30/18 08:08	11/02/18 00:20	11097-69-1	J
PCB-1260 (Aroclor 1260)	343	ug/kg	50.0	25.0	2	10/30/18 08:08	11/02/18 00:20	11096-82-5	
PCB, Total	859	ug/kg	50.0	25.0	2	10/30/18 08:08	11/02/18 00:20	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	77	%	61-120		2	10/30/18 08:08	11/02/18 00:20	877-09-8	
Decachlorobiphenyl (S)	77	%	63-113		2	10/30/18 08:08	11/02/18 00:20	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Female				1		10/29/18 14:02		
Lipid	Analytical Method: Pace Lipid								
Lipid	2.3	%			1		10/31/18 10:55		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS7-2241-SB Lab ID: 40177237005 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<50.1	ug/kg	100	50.1	4	10/30/18 08:08	11/02/18 00:38	12674-11-2	
PCB-1221 (Aroclor 1221)	<50.1	ug/kg	100	50.1	4	10/30/18 08:08	11/02/18 00:38	11104-28-2	
PCB-1232 (Aroclor 1232)	<50.1	ug/kg	100	50.1	4	10/30/18 08:08	11/02/18 00:38	11141-16-5	
PCB-1242 (Aroclor 1242)	<50.1	ug/kg	100	50.1	4	10/30/18 08:08	11/02/18 00:38	53469-21-9	
PCB-1248 (Aroclor 1248)	552	ug/kg	100	50.1	4	10/30/18 08:08	11/02/18 00:38	12672-29-6	J
PCB-1254 (Aroclor 1254)	573	ug/kg	100	50.1	4	10/30/18 08:08	11/02/18 00:38	11097-69-1	J
PCB-1260 (Aroclor 1260)	596	ug/kg	100	50.1	4	10/30/18 08:08	11/02/18 00:38	11096-82-5	
PCB, Total	1720	ug/kg	100	50.1	4	10/30/18 08:08	11/02/18 00:38	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	80	%	61-120		4	10/30/18 08:08	11/02/18 00:38	877-09-8	
Decachlorobiphenyl (S)	77	%	63-113		4	10/30/18 08:08	11/02/18 00:38	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Female				1		10/29/18 14:02		
Lipid	Analytical Method: Pace Lipid								
Lipid	3.5	%			1		10/31/18 10:55		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS7-2242-SB Lab ID: 40177237006 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.1	12.5	1	10/30/18 08:08	11/02/18 00:56	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.1	12.5	1	10/30/18 08:08	11/02/18 00:56	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.1	12.5	1	10/30/18 08:08	11/02/18 00:56	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.1	12.5	1	10/30/18 08:08	11/02/18 00:56	53469-21-9	
PCB-1248 (Aroclor 1248)	103	ug/kg	25.1	12.5	1	10/30/18 08:08	11/02/18 00:56	12672-29-6	J
PCB-1254 (Aroclor 1254)	143	ug/kg	25.1	12.5	1	10/30/18 08:08	11/02/18 00:56	11097-69-1	J
PCB-1260 (Aroclor 1260)	158	ug/kg	25.1	12.5	1	10/30/18 08:08	11/02/18 00:56	11096-82-5	
PCB, Total	404	ug/kg	25.1	12.5	1	10/30/18 08:08	11/02/18 00:56	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	80	%	61-120		1	10/30/18 08:08	11/02/18 00:56	877-09-8	
Decachlorobiphenyl (S)	80	%	63-113		1	10/30/18 08:08	11/02/18 00:56	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Female				1		10/29/18 14:02		
Lipid	Analytical Method: Pace Lipid								
Lipid	2.1	%			1		10/31/18 10:55		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS7-2244-WS Lab ID: 40177237007 Collected: 09/26/18 23:00 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:15	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:15	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:15	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:15	53469-21-9	
PCB-1248 (Aroclor 1248)	32.1	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:15	12672-29-6	
PCB-1254 (Aroclor 1254)	38.8	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:15	11097-69-1	
PCB-1260 (Aroclor 1260)	39.9	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:15	11096-82-5	
PCB, Total	111	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:15	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	80	%	61-120		1	10/30/18 08:08	11/02/18 01:15	877-09-8	
Decachlorobiphenyl (S)	78	%	63-113		1	10/30/18 08:08	11/02/18 01:15	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male					1	10/29/18 14:02		
Lipid	Analytical Method: Pace Lipid								
Lipid	0.70	%				1	10/31/18 10:56		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS7-2245-WS Lab ID: 40177237008 Collected: 09/26/18 23:00 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:33	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:33	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:33	11141-16-5	
PCB-1242 (Aroclor 1242)	137	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:33	53469-21-9	J
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:33	12672-29-6	
PCB-1254 (Aroclor 1254)	118	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:33	11097-69-1	J
PCB-1260 (Aroclor 1260)	129	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:33	11096-82-5	
PCB, Total	384	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 01:33	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	77	%	61-120		1	10/30/18 08:08	11/02/18 01:33	877-09-8	
Decachlorobiphenyl (S)	78	%	63-113		1	10/30/18 08:08	11/02/18 01:33	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male					1	10/29/18 14:02		
Lipid	Analytical Method: Pace Lipid								
Lipid	1.4	%				1	10/31/18 10:56		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS9-2246-SB Lab ID: 40177237009 Collected: 09/26/18 19:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 02:28	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 02:28	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 02:28	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 02:28	53469-21-9	
PCB-1248 (Aroclor 1248)	110	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 02:28	12672-29-6	J
PCB-1254 (Aroclor 1254)	157	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 02:28	11097-69-1	J
PCB-1260 (Aroclor 1260)	193	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 02:28	11096-82-5	
PCB, Total	460	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 02:28	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	75	%	61-120		1	10/30/18 08:08	11/02/18 02:28	877-09-8	
Decachlorobiphenyl (S)	78	%	63-113		1	10/30/18 08:08	11/02/18 02:28	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Female				1		10/29/18 14:03		
Lipid	Analytical Method: Pace Lipid								
Lipid	3.5	%			1		10/31/18 10:56		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS8-2261-WS Lab ID: 40177237010 Collected: 09/28/18 21:15 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 02:46	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 02:46	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 02:46	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 02:46	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 02:46	12672-29-6	
PCB-1254 (Aroclor 1254)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 02:46	11097-69-1	
PCB-1260 (Aroclor 1260)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 02:46	11096-82-5	
PCB, Total	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 02:46	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	81	%	61-120		1	10/30/18 08:08	11/02/18 02:46	877-09-8	
Decachlorobiphenyl (S)	78	%	63-113		1	10/30/18 08:08	11/02/18 02:46	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male					1	10/29/18 14:03		
Lipid	Analytical Method: Pace Lipid								
Lipid	0.68	%				1	10/31/18 10:56		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS8-2262-BB Lab ID: 40177237011 Collected: 09/28/18 21:15 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:04	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:04	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:04	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:04	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:04	12672-29-6	
PCB-1254 (Aroclor 1254)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:04	11097-69-1	
PCB-1260 (Aroclor 1260)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:04	11096-82-5	
PCB, Total	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:04	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	75	%	61-120		1	10/30/18 08:08	11/02/18 03:04	877-09-8	
Decachlorobiphenyl (S)	77	%	63-113		1	10/30/18 08:08	11/02/18 03:04	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:03		
Lipid	Analytical Method: Pace Lipid								
Lipid	1.3	%			1		10/31/18 10:56		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS8-2263-BB Lab ID: 40177237012 Collected: 09/28/18 21:15 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:22	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:22	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:22	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:22	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:22	12672-29-6	
PCB-1254 (Aroclor 1254)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:22	11097-69-1	
PCB-1260 (Aroclor 1260)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:22	11096-82-5	
PCB, Total	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:22	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	80	%	61-120		1	10/30/18 08:08	11/02/18 03:22	877-09-8	
Decachlorobiphenyl (S)	79	%	63-113		1	10/30/18 08:08	11/02/18 03:22	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male					1	10/29/18 14:03		
Lipid	Analytical Method: Pace Lipid								
Lipid	1.6	%				1	10/31/18 10:57		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS8-2264-BB Lab ID: 40177237013 Collected: 09/28/18 21:15 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:41	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:41	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:41	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:41	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:41	12672-29-6	
PCB-1254 (Aroclor 1254)	< 25.0 14.43	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:41	11097-69-1	U
PCB-1260 (Aroclor 1260)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:41	11096-82-5	
PCB, Total	< 25.0 14.43	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:41	1336-36-3	U
Surrogates									
Tetrachloro-m-xylene (S)	100	%	61-120		1	10/30/18 08:08	11/02/18 03:41	877-09-8	
Decachlorobiphenyl (S)	99	%	63-113		1	10/30/18 08:08	11/02/18 03:41	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:03		
Lipid	Analytical Method: Pace Lipid								
Lipid	1.5	%			1		10/31/18 10:57		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS9-2268-SB Lab ID: 40177237014 Collected: 09/27/18 14:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:59	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:59	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:59	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:59	53469-21-9	
PCB-1248 (Aroclor 1248)	68.0	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:59	12672-29-6	J
PCB-1254 (Aroclor 1254)	157	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:59	11097-69-1	J
PCB-1260 (Aroclor 1260)	168	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:59	11096-82-5	
PCB, Total	394	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 03:59	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	82	%	61-120		1	10/30/18 08:08	11/02/18 03:59	877-09-8	
Decachlorobiphenyl (S)	82	%	63-113		1	10/30/18 08:08	11/02/18 03:59	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male					1	10/29/18 14:03		
Lipid	Analytical Method: Pace Lipid								
Lipid	1.7	%				1	10/31/18 10:57		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS9-2269-SB Lab ID: 40177237015 Collected: 09/27/18 14:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:17	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:17	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:17	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:17	53469-21-9	
PCB-1248 (Aroclor 1248)	< 25.0 22.93	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:17	12672-29-6	U
PCB-1254 (Aroclor 1254)	40.6	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:17	11097-69-1	J
PCB-1260 (Aroclor 1260)	52.0	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:17	11096-82-5	
PCB, Total	92.6 116	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:17	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	79	%	61-120		1	10/30/18 08:08	11/02/18 04:17	877-09-8	
Decachlorobiphenyl (S)	79	%	63-113		1	10/30/18 08:08	11/02/18 04:17	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:03		
Lipid	Analytical Method: Pace Lipid								
Lipid	1.7	%			1		10/31/18 10:57		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS9-2270-SB Lab ID: 40177237016 Collected: 09/27/18 14:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:35	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:35	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:35	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:35	53469-21-9	
PCB-1248 (Aroclor 1248)	124	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:35	12672-29-6	JN
PCB-1254 (Aroclor 1254)	172	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:35	11097-69-1	J
PCB-1260 (Aroclor 1260)	118	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:35	11096-82-5	
PCB, Total	415	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 04:35	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	77	%	61-120		1	10/30/18 08:08	11/02/18 04:35	877-09-8	
Decachlorobiphenyl (S)	79	%	63-113		1	10/30/18 08:08	11/02/18 04:35	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male					1	10/29/18 14:03		
Lipid	Analytical Method: Pace Lipid								
Lipid	2.7	%				1	10/31/18 10:58		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS9-2271-SB Lab ID: 40177237017 Collected: 09/27/18 14:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 04:54	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 04:54	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 04:54	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 04:54	53469-21-9	
PCB-1248 (Aroclor 1248)	30.1	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 04:54	12672-29-6	J
PCB-1254 (Aroclor 1254)	41.3	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 04:54	11097-69-1	J
PCB-1260 (Aroclor 1260)	47.6	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 04:54	11096-82-5	
PCB, Total	119	ug/kg	24.9	12.5	1	10/30/18 08:08	11/02/18 04:54	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	79	%	61-120		1	10/30/18 08:08	11/02/18 04:54	877-09-8	
Decachlorobiphenyl (S)	81	%	63-113		1	10/30/18 08:08	11/02/18 04:54	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male					1	10/29/18 14:04		
Lipid	Analytical Method: Pace Lipid								
Lipid	2.0	%				1	10/31/18 10:58		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS9-2272-WS Lab ID: 40177237018 Collected: 09/27/18 14:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:12	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:12	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:12	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:12	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:12	12672-29-6	
PCB-1254 (Aroclor 1254)	< 25.0	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:12	11097-69-1	U
PCB-1260 (Aroclor 1260)	13.7J	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:12	11096-82-5	
PCB, Total	13.7	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:12	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	81	%	61-120		1	10/30/18 08:08	11/02/18 05:12	877-09-8	
Decachlorobiphenyl (S)	77	%	63-113		1	10/30/18 08:08	11/02/18 05:12	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:04		
Lipid	Analytical Method: Pace Lipid								
Lipid	1.2	%			1		10/31/18 10:58		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS9-2273-WS Lab ID: 40177237019 Collected: 09/27/18 14:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:30	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:30	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:30	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:30	53469-21-9	
PCB-1248 (Aroclor 1248)	12.8J	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:30	12672-29-6	
PCB-1254 (Aroclor 1254)	15.9J	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:30	11097-69-1	
PCB-1260 (Aroclor 1260)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:30	11096-82-5	
PCB, Total	28.7	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:30	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	75	%	61-120		1	10/30/18 08:08	11/02/18 05:30	877-09-8	
Decachlorobiphenyl (S)	78	%	63-113		1	10/30/18 08:08	11/02/18 05:30	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Female				1		10/29/18 14:04		
Lipid	Analytical Method: Pace Lipid								
Lipid	0.89	%			1		10/31/18 10:58		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS9-2274-WS Lab ID: 40177237020 Collected: 09/27/18 14:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:48	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:48	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:48	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:48	53469-21-9	
PCB-1248 (Aroclor 1248)	42.0	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:48	12672-29-6	J
PCB-1254 (Aroclor 1254)	51.7	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:48	11097-69-1	J
PCB-1260 (Aroclor 1260)	30.6	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:48	11096-82-5	J
PCB, Total	124	ug/kg	25.0	12.5	1	10/30/18 08:08	11/02/18 05:48	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	74	%	61-120		1	10/30/18 08:08	11/02/18 05:48	877-09-8	
Decachlorobiphenyl (S)	75	%	63-113		1	10/30/18 08:08	11/02/18 05:48	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male					1	10/29/18 14:04		
Lipid	Analytical Method: Pace Lipid								
Lipid	1.5	%				1	10/31/18 10:58		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS9-2275-WS Lab ID: 40177237021 Collected: 09/27/18 14:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 06:43	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 06:43	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 06:43	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 06:43	53469-21-9	
PCB-1248 (Aroclor 1248)	86.2	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 06:43	12672-29-6	J
PCB-1254 (Aroclor 1254)	79.1	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 06:43	11097-69-1	J
PCB-1260 (Aroclor 1260)	71.8	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 06:43	11096-82-5	
PCB, Total	237	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 06:43	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	86	%	61-120		1	11/01/18 08:04	11/10/18 06:43	877-09-8	
Decachlorobiphenyl (S)	86	%	63-113		1	11/01/18 08:04	11/10/18 06:43	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:06		
Lipid	Analytical Method: Pace Lipid								
Lipid	1.6	%			1		11/07/18 10:17		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS9-2276-WS Lab ID: 40177237022 Collected: 09/27/18 14:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:01	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:01	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:01	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:01	53469-21-9	
PCB-1248 (Aroclor 1248)	79.3	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:01	12672-29-6	J
PCB-1254 (Aroclor 1254)	110	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:01	11097-69-1	J
PCB-1260 (Aroclor 1260)	60.4	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:01	11096-82-5	
PCB, Total	250	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:01	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	76	%	61-120		1	11/01/18 08:04	11/10/18 07:01	877-09-8	
Decachlorobiphenyl (S)	78	%	63-113		1	11/01/18 08:04	11/10/18 07:01	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male					1	10/29/18 14:06		
Lipid	Analytical Method: Pace Lipid								
Lipid	1.9	%				1	11/07/18 10:17		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS9-2277-WS Lab ID: 40177237023 Collected: 09/27/18 14:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 07:19	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 07:19	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 07:19	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 07:19	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 07:19	12672-29-6	
PCB-1254 (Aroclor 1254)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 07:19	11097-69-1	
PCB-1260 (Aroclor 1260)	14.5J	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 07:19	11096-82-5	
PCB, Total	14.5J	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 07:19	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	82	%	61-120		1	11/01/18 08:04	11/10/18 07:19	877-09-8	
Decachlorobiphenyl (S)	79	%	63-113		1	11/01/18 08:04	11/10/18 07:19	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1	10/29/18 14:06			
Lipid	Analytical Method: Pace Lipid								
Lipid	0.66	%			1	11/07/18 10:17			

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS7-2301-WS Lab ID: 40177237024 Collected: 10/02/18 21:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 07:37	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 07:37	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 07:37	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 07:37	53469-21-9	
PCB-1248 (Aroclor 1248)	21.1J	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 07:37	12672-29-6	
PCB-1254 (Aroclor 1254)	47.4	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 07:37	11097-69-1	J
PCB-1260 (Aroclor 1260)	47.3	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 07:37	11096-82-5	
PCB, Total	116	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 07:37	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	76	%	61-120		1	11/01/18 08:04	11/10/18 07:37	877-09-8	
Decachlorobiphenyl (S)	76	%	63-113		1	11/01/18 08:04	11/10/18 07:37	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male					1	10/29/18 14:07		
Lipid	Analytical Method: Pace Lipid								
Lipid	0.82	%				1	11/07/18 10:18		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS7-2302-WS Lab ID: 40177237025 Collected: 10/02/18 21:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:56	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:56	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:56	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:56	53469-21-9	
PCB-1248 (Aroclor 1248)	65.0	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:56	12672-29-6	J
PCB-1254 (Aroclor 1254)	86.2	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:56	11097-69-1	J
PCB-1260 (Aroclor 1260)	72.1	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:56	11096-82-5	
PCB, Total	223	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 07:56	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	79	%	61-120		1	11/01/18 08:04	11/10/18 07:56	877-09-8	
Decachlorobiphenyl (S)	82	%	63-113		1	11/01/18 08:04	11/10/18 07:56	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male					1	10/29/18 14:07		
Lipid	Analytical Method: Pace Lipid								
Lipid	2.5	%				1	11/07/18 10:18		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS7-2303-WS Lab ID: 40177237026 Collected: 10/02/18 21:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:14	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:14	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:14	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:14	53469-21-9	
PCB-1248 (Aroclor 1248)	17.7J	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:14	12672-29-6	
PCB-1254 (Aroclor 1254)	< 25.0 19.4J	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:14	11097-69-1	U
PCB-1260 (Aroclor 1260)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:14	11096-82-5	
PCB, Total	17.7 37.1	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:14	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	81	%	61-120		1	11/01/18 08:04	11/10/18 08:14	877-09-8	
Decachlorobiphenyl (S)	82	%	63-113		1	11/01/18 08:04	11/10/18 08:14	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:07		
Lipid	Analytical Method: Pace Lipid								
Lipid	1.1	%			1		11/07/18 10:18		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS8-2304-SB Lab ID: 40177237027 Collected: 10/02/18 17:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:32	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:32	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:32	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:32	53469-21-9	
PCB-1248 (Aroclor 1248)	24.0J	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:32	12672-29-6	
PCB-1254 (Aroclor 1254)	59.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:32	11097-69-1	JN
PCB-1260 (Aroclor 1260)	60.8	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:32	11096-82-5	
PCB, Total	144	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:32	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	84	%	61-120		1	11/01/18 08:04	11/10/18 08:32	877-09-8	
Decachlorobiphenyl (S)	87	%	63-113		1	11/01/18 08:04	11/10/18 08:32	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:07		
Lipid	Analytical Method: Pace Lipid								
Lipid	6.0	%			1		11/07/18 10:18		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS8-2305-SB Lab ID: 40177237028 Collected: 10/02/18 17:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:50	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:50	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:50	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:50	53469-21-9	
PCB-1248 (Aroclor 1248)	17.7J	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:50	12672-29-6	JN
PCB-1254 (Aroclor 1254)	44.7	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:50	11097-69-1	
PCB-1260 (Aroclor 1260)	40.8	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:50	11096-82-5	J
PCB, Total	103	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 08:50	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	82	%	61-120		1	11/01/18 08:04	11/10/18 08:50	877-09-8	
Decachlorobiphenyl (S)	82	%	63-113		1	11/01/18 08:04	11/10/18 08:50	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Female				1		10/29/18 14:07		
Lipid	Analytical Method: Pace Lipid								
Lipid	4.5	%			1		11/07/18 10:18		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS9-2306-SB Lab ID: 40177237029 Collected: 10/02/18 22:15 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 09:09	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 09:09	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 09:09	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 09:09	53469-21-9	
PCB-1248 (Aroclor 1248)	33.0	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 09:09	12672-29-6	
PCB-1254 (Aroclor 1254)	38.4	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 09:09	11097-69-1	J
PCB-1260 (Aroclor 1260)	38.8	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 09:09	11096-82-5	
PCB, Total	110	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 09:09	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	79	%	61-120		1	11/01/18 08:04	11/10/18 09:09	877-09-8	
Decachlorobiphenyl (S)	81	%	63-113		1	11/01/18 08:04	11/10/18 09:09	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:07		
Lipid	Analytical Method: Pace Lipid								
Lipid	2.3	%			1		11/07/18 10:19		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS7-2307-BB Lab ID: 40177237030 Collected: 10/03/18 00:00 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 09:27	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 09:27	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 09:27	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 09:27	53469-21-9	
PCB-1248 (Aroclor 1248)	32.8	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 09:27	12672-29-6	JN
PCB-1254 (Aroclor 1254)	69.1	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 09:27	11097-69-1	J
PCB-1260 (Aroclor 1260)	97.3	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 09:27	11096-82-5	
PCB, Total	199	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 09:27	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	78	%	61-120		1	11/01/18 08:04	11/10/18 09:27	877-09-8	
Decachlorobiphenyl (S)	79	%	63-113		1	11/01/18 08:04	11/10/18 09:27	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:07		
Lipid	Analytical Method: Pace Lipid								
Lipid	1.1	%			1		11/07/18 10:19		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS8-2312-SB Lab ID: 40177237031 Collected: 10/02/18 19:45 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:22	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:22	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:22	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:22	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:22	12672-29-6	
PCB-1254 (Aroclor 1254)	<25.0	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:22	11097-69-1	U
PCB-1260 (Aroclor 1260)	21.4J	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:22	11096-82-5	
PCB, Total	21.4 - 43.8	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:22	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	81	%	61-120		1	11/01/18 08:04	11/10/18 10:22	877-09-8	
Decachlorobiphenyl (S)	81	%	63-113		1	11/01/18 08:04	11/10/18 10:22	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:07		
Lipid	Analytical Method: Pace Lipid								
Lipid	2.6	%			1		11/07/18 10:19		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS8-2313-SB Lab ID: 40177237032 Collected: 10/02/18 19:45 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 10:40	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 10:40	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 10:40	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 10:40	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 10:40	12672-29-6	
PCB-1254 (Aroclor 1254)	<25.0	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 10:40	11097-69-1	U
PCB-1260 (Aroclor 1260)	17.7J	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 10:40	11096-82-5	
PCB, Total	17.7	ug/kg	24.9	12.5	1	11/01/18 08:04	11/10/18 10:40	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	85	%	61-120		1	11/01/18 08:04	11/10/18 10:40	877-09-8	
Decachlorobiphenyl (S)	86	%	63-113		1	11/01/18 08:04	11/10/18 10:40	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:07		
Lipid	Analytical Method: Pace Lipid								
Lipid	2.1	%			1		11/07/18 10:19		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS8-2314-SB Lab ID: 40177237033 Collected: 10/02/18 19:45 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:58	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:58	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:58	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:58	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:58	12672-29-6	
PCB-1254 (Aroclor 1254)	<25.0	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:58	11097-69-1	U
PCB-1260 (Aroclor 1260)	15.2J	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:58	11096-82-5	
PCB, Total	15.2	ug/kg	25.1	12.5	1	11/01/18 08:04	11/10/18 10:58	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	79	%	61-120		1	11/01/18 08:04	11/10/18 10:58	877-09-8	
Decachlorobiphenyl (S)	81	%	63-113		1	11/01/18 08:04	11/10/18 10:58	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:07		
Lipid	Analytical Method: Pace Lipid								
Lipid	2.4	%			1		11/07/18 10:19		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS8-2315-SB Lab ID: 40177237034 Collected: 10/02/18 19:45 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:16	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:16	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:16	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:16	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:16	12672-29-6	
PCB-1254 (Aroclor 1254)	<25.0	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:16	11097-69-1	U
PCB-1260 (Aroclor 1260)	13.5J	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:16	11096-82-5	
PCB, Total	13.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:16	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	79	%	61-120		1	11/01/18 08:04	11/10/18 11:16	877-09-8	
Decachlorobiphenyl (S)	82	%	63-113		1	11/01/18 08:04	11/10/18 11:16	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:07		
Lipid	Analytical Method: Pace Lipid								
Lipid	2.1	%			1		11/07/18 10:20		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS8-2316-WS Lab ID: 40177237035 Collected: 10/02/18 19:45 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:34	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:34	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:34	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:34	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:34	12672-29-6	
PCB-1254 (Aroclor 1254)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:34	11097-69-1	
PCB-1260 (Aroclor 1260)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:34	11096-82-5	
PCB, Total	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:34	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	84	%	61-120		1	11/01/18 08:04	11/10/18 11:34	877-09-8	
Decachlorobiphenyl (S)	81	%	63-113		1	11/01/18 08:04	11/10/18 11:34	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:07		
Lipid	Analytical Method: Pace Lipid								
Lipid	0.99	%			1		11/07/18 10:20		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177237

Sample: FS8-2317-WS Lab ID: 40177237036 Collected: 10/02/18 19:45 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:53	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:53	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:53	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:53	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:53	12672-29-6	
PCB-1254 (Aroclor 1254)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:53	11097-69-1	
PCB-1260 (Aroclor 1260)	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:53	11096-82-5	
PCB, Total	<12.5	ug/kg	25.0	12.5	1	11/01/18 08:04	11/10/18 11:53	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	82	%	61-120		1	11/01/18 08:04	11/10/18 11:53	877-09-8	
Decachlorobiphenyl (S)	84	%	63-113		1	11/01/18 08:04	11/10/18 11:53	2051-24-3	
Fish Gender Typing	Analytical Method: Pace Gender Typing								
Gender	Male				1		10/29/18 14:07		
Lipid	Analytical Method: Pace Lipid								
Lipid	2.1	%			1		11/07/18 10:20		

REPORT OF LABORATORY ANALYSIS

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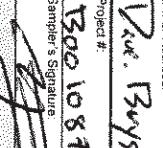


ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

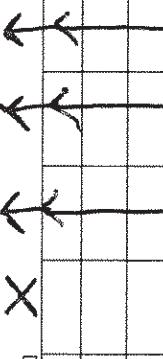
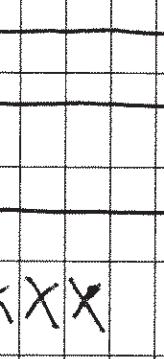
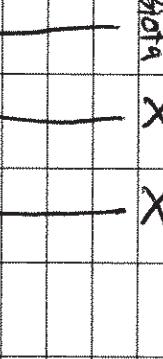
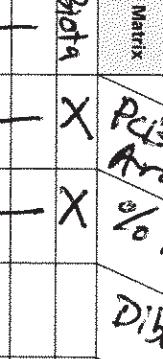
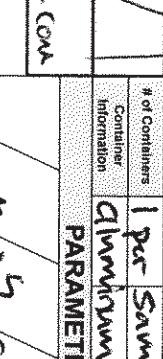
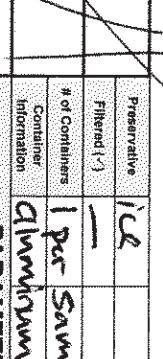
Area East Fish Sampling
Lab Work Order #
40177238
27 of 29

Contact & Company Name: Dave Buys Arcadis		Telephone: 315.263.6662
Address: 110 W. Fayette St		Fax:
City: Syracuse NY	State: 	Zip:
E-mail Address: Dave.Buys@Arcadis.com		Project Number/Location (City, State): 3018 SL22P fish Sampling 1300 10878
Sampler's Printed Name: Matt Frackleton		
Sampler's Signature: 		

Preservative: ice	Container Key: A. H₂SO₄
# of Containers: 1 per Sample	Container Information Key: 1. 40 ml Vial
Container Information: Glutaraldehyde	B. HCl C. HNO ₃ D. NaOH E. None F. Other G. Other H. Other I. Other J. Other K. Other L. Other M. Other N. Other O. Other P. Other Q. Other R. Other S. Other T. Other U. Other V. Other W. Other X. Other Y. Other Z. Other
Project #: PCB	
Sample Type: Biotia	
Matrix: X	

Collection Date: 7/24/10 1030	Collection Time: 	Collection Comp.: X	Collection Grab: X
REMARKS			
Analyze Whole Body Composite Swiner Samples for PCB Aroclors and percent lipids. Analyze a subset (4) for Dibenzofurans. Follow work plan.			

Preservation Key: A. H₂SO₄	Container Information Key: 1. 40 ml Vial
B. HCl C. HNO ₃ D. NaOH E. None F. Other G. Other H. Other I. Other J. Other K. Other L. Other M. Other N. Other O. Other P. Other Q. Other R. Other S. Other T. Other U. Other V. Other W. Other X. Other Y. Other Z. Other	Keys
Matrix Key: SO - Soil W - Water SL - Sludge A - Air T - Tissue S - Sample Wipe	
Laboratory Received By: Fed Ex	

Special Instructions/Comments: Follow work plan.		Reinstituted By: Dave Buys		Received By: Fed Ex		Reinstituted By: Sydney (Dave)	
Lab Name: Pau Analytical	Cooler/Custody Seal (<input checked="" type="checkbox"/>)	Printed Name: Dave Buys	Received By: Fed Ex	Printed Name: Sydney (Dave)	Printed Name: 	Laboratory Received By: 	Printed Name:
Samples packed with ice (<input checked="" type="checkbox"/>)	<input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Signature: 	Signature: 	Signature: 	Signature: 	Signature: 	Signature: 
Special Turnaround Requirements:		Firm/Courier: Arcadis	Firm/Courier: Fed Ex	Firm/Courier: 	Firm/Courier: 	Firm/Courier: 	Firm/Courier:
Shipping Tracking #: Fed Ex	Condition/Cooler Temp: 4,35,5,11	Date/Time: 10/6/10 1500	Date/Time: 10/6/10 1010	Date/Time: 10/6/10 1010	Date/Time: 10/6/10 1010	Date/Time: 10/6/10 1010	Date/Time: 10/6/10 1010

ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS7-2227-SS Lab ID: 40177238001 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 02:59	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 02:59	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 02:59	11141-16-5	
PCB-1242 (Aroclor 1242)	91.1	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 02:59	53469-21-9	J
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 02:59	12672-29-6	
PCB-1254 (Aroclor 1254)	146	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 02:59	11097-69-1	
PCB-1260 (Aroclor 1260)	82.8	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 02:59	11096-82-5	J
PCB, Total	320	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 02:59	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	83	%	61-120		1	11/09/18 07:11	11/16/18 02:59	877-09-8	
Decachlorobiphenyl (S)	89	%	63-113		1	11/09/18 07:11	11/16/18 02:59	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	5.6	%			1		11/14/18 08:48		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS7-2228-SS Lab ID: 40177238002 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 03:17	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 03:17	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 03:17	11141-16-5	
PCB-1242 (Aroclor 1242)	92.0	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 03:17	53469-21-9	J
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 03:17	12672-29-6	
PCB-1254 (Aroclor 1254)	205	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 03:17	11097-69-1	
PCB-1260 (Aroclor 1260)	101	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 03:17	11096-82-5	J
PCB, Total	398	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 03:17	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	78	%	61-120		1	11/09/18 07:11	11/16/18 03:17	877-09-8	
Decachlorobiphenyl (S)	83	%	63-113		1	11/09/18 07:11	11/16/18 03:17	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	5.1	%			1		11/14/18 08:49		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS7-2229-SS Lab ID: 40177238003 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<25.0	ug/kg	49.9	25.0	2	11/09/18 07:11	11/16/18 03:35	12674-11-2	
PCB-1221 (Aroclor 1221)	<25.0	ug/kg	49.9	25.0	2	11/09/18 07:11	11/16/18 03:35	11104-28-2	
PCB-1232 (Aroclor 1232)	<25.0	ug/kg	49.9	25.0	2	11/09/18 07:11	11/16/18 03:35	11141-16-5	
PCB-1242 (Aroclor 1242)	162	ug/kg	49.9	25.0	2	11/09/18 07:11	11/16/18 03:35	53469-21-9	J
PCB-1248 (Aroclor 1248)	<25.0	ug/kg	49.9	25.0	2	11/09/18 07:11	11/16/18 03:35	12672-29-6	
PCB-1254 (Aroclor 1254)	215	ug/kg	49.9	25.0	2	11/09/18 07:11	11/16/18 03:35	11097-69-1	
PCB-1260 (Aroclor 1260)	126	ug/kg	49.9	25.0	2	11/09/18 07:11	11/16/18 03:35	11096-82-5	J
PCB, Total	503	ug/kg	49.9	25.0	2	11/09/18 07:11	11/16/18 03:35	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	79	%	61-120		2	11/09/18 07:11	11/16/18 03:35	877-09-8	
Decachlorobiphenyl (S)	86	%	63-113		2	11/09/18 07:11	11/16/18 03:35	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	5.1	%			1		11/14/18 08:49		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS7-2230-SS Lab ID: 40177238004 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 03:53	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 03:53	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 03:53	11141-16-5	
PCB-1242 (Aroclor 1242)	60.4	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 03:53	53469-21-9	J
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 03:53	12672-29-6	
PCB-1254 (Aroclor 1254)	100	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 03:53	11097-69-1	
PCB-1260 (Aroclor 1260)	63.7	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 03:53	11096-82-5	J
PCB, Total	224	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 03:53	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	78	%	61-120		1	11/09/18 07:11	11/16/18 03:53	877-09-8	
Decachlorobiphenyl (S)	87	%	63-113		1	11/09/18 07:11	11/16/18 03:53	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	5.5	%			1		11/14/18 08:49		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS7-2231-SS Lab ID: 40177238005 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:10	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:10	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:10	11141-16-5	
PCB-1242 (Aroclor 1242)	129	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:10	53469-21-9	J
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:10	12672-29-6	
PCB-1254 (Aroclor 1254)	178	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:10	11097-69-1	
PCB-1260 (Aroclor 1260)	107	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:10	11096-82-5	J
PCB, Total	415	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:10	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	87	%	61-120		1	11/09/18 07:11	11/16/18 04:10	877-09-8	
Decachlorobiphenyl (S)	95	%	63-113		1	11/09/18 07:11	11/16/18 04:10	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	5.0	%			1		11/14/18 08:50		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS7-2232-SS Lab ID: 40177238006 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:28	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:28	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:28	11141-16-5	
PCB-1242 (Aroclor 1242)	66.0	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:28	53469-21-9	J
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:28	12672-29-6	
PCB-1254 (Aroclor 1254)	90.1	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:28	11097-69-1	
PCB-1260 (Aroclor 1260)	62.8	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:28	11096-82-5	J
PCB, Total	219	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 04:28	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	80	%	61-120		1	11/09/18 07:11	11/16/18 04:28	877-09-8	
Decachlorobiphenyl (S)	91	%	63-113		1	11/09/18 07:11	11/16/18 04:28	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	4.5	%			1		11/14/18 08:50		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS7-2233-SS Lab ID: 40177238007 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<25.0	ug/kg	50.0	25.0	2	11/09/18 07:11	11/16/18 04:46	12674-11-2	
PCB-1221 (Aroclor 1221)	<25.0	ug/kg	50.0	25.0	2	11/09/18 07:11	11/16/18 04:46	11104-28-2	
PCB-1232 (Aroclor 1232)	<25.0	ug/kg	50.0	25.0	2	11/09/18 07:11	11/16/18 04:46	11141-16-5	
PCB-1242 (Aroclor 1242)	158	ug/kg	50.0	25.0	2	11/09/18 07:11	11/16/18 04:46	53469-21-9	J
PCB-1248 (Aroclor 1248)	<25.0	ug/kg	50.0	25.0	2	11/09/18 07:11	11/16/18 04:46	12672-29-6	
PCB-1254 (Aroclor 1254)	273	ug/kg	50.0	25.0	2	11/09/18 07:11	11/16/18 04:46	11097-69-1	
PCB-1260 (Aroclor 1260)	183	ug/kg	50.0	25.0	2	11/09/18 07:11	11/16/18 04:46	11096-82-5	J
PCB, Total	614	ug/kg	50.0	25.0	2	11/09/18 07:11	11/16/18 04:46	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	76	%	61-120		2	11/09/18 07:11	11/16/18 04:46	877-09-8	
Decachlorobiphenyl (S)	84	%	63-113		2	11/09/18 07:11	11/16/18 04:46	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	5.4	%			1		11/14/18 08:50		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS7-2234-SS Lab ID: 40177238008 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 05:04	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 05:04	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 05:04	11141-16-5	
PCB-1242 (Aroclor 1242)	109	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 05:04	53469-21-9	J
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 05:04	12672-29-6	
PCB-1254 (Aroclor 1254)	164	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 05:04	11097-69-1	
PCB-1260 (Aroclor 1260)	94.8	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 05:04	11096-82-5	J
PCB, Total	367	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 05:04	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	90	%	61-120		1	11/09/18 07:11	11/16/18 05:04	877-09-8	
Decachlorobiphenyl (S)	97	%	63-113		1	11/09/18 07:11	11/16/18 05:04	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	4.8	%			1		11/14/18 08:50		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS7-2235-SS Lab ID: 40177238009 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 05:57	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 05:57	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 05:57	11141-16-5	
PCB-1242 (Aroclor 1242)	79.6	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 05:57	53469-21-9	J
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 05:57	12672-29-6	
PCB-1254 (Aroclor 1254)	122	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 05:57	11097-69-1	
PCB-1260 (Aroclor 1260)	78.8	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 05:57	11096-82-5	J
PCB, Total	280	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 05:57	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	86	%	61-120		1	11/09/18 07:11	11/16/18 05:57	877-09-8	
Decachlorobiphenyl (S)	92	%	63-113		1	11/09/18 07:11	11/16/18 05:57	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	5.2	%			1		11/14/18 08:50		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS7-2236-SS Lab ID: 40177238010 Collected: 09/26/18 18:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<25.0	ug/kg	50.1	25.0	2	11/09/18 07:11	11/16/18 06:15	12674-11-2	
PCB-1221 (Aroclor 1221)	<25.0	ug/kg	50.1	25.0	2	11/09/18 07:11	11/16/18 06:15	11104-28-2	
PCB-1232 (Aroclor 1232)	<25.0	ug/kg	50.1	25.0	2	11/09/18 07:11	11/16/18 06:15	11141-16-5	
PCB-1242 (Aroclor 1242)	132	ug/kg	50.1	25.0	2	11/09/18 07:11	11/16/18 06:15	53469-21-9	J
PCB-1248 (Aroclor 1248)	<25.0	ug/kg	50.1	25.0	2	11/09/18 07:11	11/16/18 06:15	12672-29-6	
PCB-1254 (Aroclor 1254)	227	ug/kg	50.1	25.0	2	11/09/18 07:11	11/16/18 06:15	11097-69-1	
PCB-1260 (Aroclor 1260)	143	ug/kg	50.1	25.0	2	11/09/18 07:11	11/16/18 06:15	11096-82-5	J
PCB, Total	502	ug/kg	50.1	25.0	2	11/09/18 07:11	11/16/18 06:15	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	81	%	61-120		2	11/09/18 07:11	11/16/18 06:15	877-09-8	
Decachlorobiphenyl (S)	89	%	63-113		2	11/09/18 07:11	11/16/18 06:15	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	4.7	%			1		11/14/18 08:51		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS8-2256-SS Lab ID: 40177238011 Collected: 09/27/18 21:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.1	12.5	1	11/09/18 07:11	11/16/18 06:32	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.1	12.5	1	11/09/18 07:11	11/16/18 06:32	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.1	12.5	1	11/09/18 07:11	11/16/18 06:32	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.1	12.5	1	11/09/18 07:11	11/16/18 06:32	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.1	12.5	1	11/09/18 07:11	11/16/18 06:32	12672-29-6	
PCB-1254 (Aroclor 1254)	<25.1	ug/kg	25.1	12.5	1	11/09/18 07:11	11/16/18 06:32	11097-69-1	U
PCB-1260 (Aroclor 1260)	17.4J	ug/kg	25.1	12.5	1	11/09/18 07:11	11/16/18 06:32	11096-82-5	
PCB, Total	17.4	ug/kg	25.1	12.5	1	11/09/18 07:11	11/16/18 06:32	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	83	%	61-120		1	11/09/18 07:11	11/16/18 06:32	877-09-8	
Decachlorobiphenyl (S)	91	%	63-113		1	11/09/18 07:11	11/16/18 06:32	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	3.9	%			1		11/14/18 08:51		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS8-2257-SS Lab ID: 40177238012 Collected: 09/27/18 21:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 06:50	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 06:50	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 06:50	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 06:50	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 06:50	12672-29-6	
PCB-1254 (Aroclor 1254)	14.8J	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 06:50	11097-69-1	
PCB-1260 (Aroclor 1260)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 06:50	11096-82-5	
PCB, Total	14.8J	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 06:50	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	77	%	61-120		1	11/09/18 07:11	11/16/18 06:50	877-09-8	
Decachlorobiphenyl (S)	88	%	63-113		1	11/09/18 07:11	11/16/18 06:50	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	3.0	%			1		11/14/18 08:51		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS8-2258-SS Lab ID: 40177238013 Collected: 09/27/18 21:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:08	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:08	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:08	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:08	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:08	12672-29-6	
PCB-1254 (Aroclor 1254)	17.8J	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:08	11097-69-1	
PCB-1260 (Aroclor 1260)	16.3J	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:08	11096-82-5	
PCB, Total	34.1	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:08	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	84	%	61-120		1	11/09/18 07:11	11/16/18 07:08	877-09-8	
Decachlorobiphenyl (S)	90	%	63-113		1	11/09/18 07:11	11/16/18 07:08	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	3.5	%			1		11/14/18 08:51		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS8-2259-SS Lab ID: 40177238014 Collected: 09/27/18 21:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 07:26	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 07:26	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 07:26	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 07:26	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 07:26	12672-29-6	
PCB-1254 (Aroclor 1254)	13.7J	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 07:26	11097-69-1	
PCB-1260 (Aroclor 1260)	<12.5	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 07:26	11096-82-5	
PCB, Total	13.7J	ug/kg	24.9	12.5	1	11/09/18 07:11	11/16/18 07:26	1336-36-3	
Surrogates									
Tetrachloro-m-xylene (S)	77	%	61-120		1	11/09/18 07:11	11/16/18 07:26	877-09-8	
Decachlorobiphenyl (S)	86	%	63-113		1	11/09/18 07:11	11/16/18 07:26	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	3.5	%			1		11/14/18 08:51		

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ANALYTICAL RESULTS

Project: B0010878 2018 SLRRP FISH

Pace Project No.: 40177238

Sample: FS8-2260-SS Lab ID: 40177238015 Collected: 09/27/18 21:30 Received: 10/06/18 10:10 Matrix: Tissue

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA 3541								
PCB-1016 (Aroclor 1016)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:43	12674-11-2	
PCB-1221 (Aroclor 1221)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:43	11104-28-2	
PCB-1232 (Aroclor 1232)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:43	11141-16-5	
PCB-1242 (Aroclor 1242)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:43	53469-21-9	
PCB-1248 (Aroclor 1248)	<12.5	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:43	12672-29-6	
PCB-1254 (Aroclor 1254)	<25.0 47.1J	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:43	11097-69-1	U
PCB-1260 (Aroclor 1260)	13.6J	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:43	11096-82-5	
PCB, Total	13.6 30.7	ug/kg	25.0	12.5	1	11/09/18 07:11	11/16/18 07:43	1336-36-3	J
Surrogates									
Tetrachloro-m-xylene (S)	78	%	61-120		1	11/09/18 07:11	11/16/18 07:43	877-09-8	
Decachlorobiphenyl (S)	86	%	63-113		1	11/09/18 07:11	11/16/18 07:43	2051-24-3	
Lipid	Analytical Method: Pace Lipid								
Lipid	4.1	%			1		11/14/18 08:51		

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612-607-6444

Method 8290 Sample Analysis Results

Client - PACE Wisconsin

Client's Sample ID	FS7-2234-SS			
Lab Sample ID	40177238008			
Filename	U181116A_13			
Injected By	SMT			
Total Amount Extracted	20.0 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	09/26/2018 18:30	
ICAL ID	U181015	Received	10/31/2018 11:30	
CCal Filename(s)	U181116A_01 & U181116A_17	Extracted	11/09/2018 16:30	
Method Blank ID	BLANK-66155	Analyzed	11/16/2018 07:42	

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	3.7	----	0.50	2,3,7,8-TCDF-13C	2.00	65
Total TCDF	7.8	----	0.50	1,2,3,7,8-PeCDF-13C	2.00	68
1,2,3,7,8-PeCDF	ND	----	2.5	2,3,4,7,8-PeCDF-13C	2.00	59
2,3,4,7,8-PeCDF	ND	----	2.5	1,2,3,4,7,8-HxCDF-13C	2.00	60
Total PeCDF	ND	----	2.5	1,2,3,6,7,8-HxCDF-13C	2.00	75
1,2,3,4,7,8-HxCDF	ND	----	2.5	2,3,4,6,7,8-HxCDF-13C	2.00	72
1,2,3,6,7,8-HxCDF	ND	----	2.5	1,2,3,7,8,9-HxCDF-13C	2.00	63
2,3,4,6,7,8-HxCDF	ND	----	2.5	1,2,3,4,6,7,8-HxCDF-13C	2.00	54
1,2,3,7,8,9-HxCDF	ND	----	2.5	1,2,3,4,7,8,9-HxCDF-13C	2.00	69
Total HxCDF	ND	----	2.5	1,2,3,4,7,8,9-HxCDF-13C	2.00	
1,2,3,4,6,7,8-HpCDF	ND	----	2.5	OCDD-13C	4.00	53
1,2,3,4,7,8,9-HpCDF	ND	----	2.5			
Total HpCDF	ND	----	2.5	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
OCDF	ND	----	5.0	2,3,7,8-TCDD-37Cl4	0.20	64

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

ND = Not Detected

EMPC = Estimated Maximum Possible Concentration

NA = Not Applicable

RL = Reporting Limit

NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612-607-6444

Method 8290 Sample Analysis Results

Client - PACE Wisconsin

Client's Sample ID	FS7-2235-SS			
Lab Sample ID	40177238009			
Filename	U181116A_14			
Injected By	SMT			
Total Amount Extracted	20.0 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	09/26/2018 18:30	
ICAL ID	U181015	Received	10/31/2018 11:30	
CCal Filename(s)	U181116A_01 & U181116A_17	Extracted	11/09/2018 16:30	
Method Blank ID	BLANK-66155	Analyzed	11/16/2018 08:28	

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	3.5	----	0.50	2,3,7,8-TCDF-13C	2.00	67
Total TCDF	9.1	----	0.50	1,2,3,7,8-PeCDF-13C	2.00	66
1,2,3,7,8-PeCDF	ND	----	2.5	2,3,4,7,8-PeCDF-13C	2.00	67
2,3,4,7,8-PeCDF	ND	----	2.5	1,2,3,4,7,8-HxCDF-13C	2.00	83
Total PeCDF	ND	----	2.5	1,2,3,6,7,8-HxCDF-13C	2.00	88
1,2,3,4,7,8-HxCDF	ND	----	2.5	2,3,4,6,7,8-HxCDF-13C	2.00	78
1,2,3,6,7,8-HxCDF	ND	----	2.5	1,2,3,7,8,9-HxCDF-13C	2.00	72
2,3,4,6,7,8-HxCDF	ND	----	2.5	1,2,3,4,6,7,8-HxCDF-13C	2.00	
1,2,3,7,8,9-HxCDF	ND	----	2.5	1,2,3,4,6,7,8-HxCDF-13C	2.00	70
Total HxCDF	ND	----	2.5	1,2,3,4,7,8,9-HxCDF-13C	2.00	72
1,2,3,4,6,7,8-HpCDF	ND	----	2.5	OCDD-13C	4.00	53
1,2,3,4,7,8,9-HpCDF	ND	----	2.5	1,2,3,4-TCDD-13C	2.00	NA
Total HpCDF	ND	----	2.5	1,2,3,7,8,9-HxCDD-13C	2.00	NA
OCDF	ND	----	5.0	2,3,7,8-TCDD-37Cl4	0.20	69

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

ND = Not Detected

EMPC = Estimated Maximum Possible Concentration

NA = Not Applicable

RL = Reporting Limit

NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612-607-6444

Method 8290 Sample Analysis Results

Client - PACE Wisconsin

Client's Sample ID	FS7-2236-SS			
Lab Sample ID	40177238010			
Filename	U181116A_15			
Injected By	SMT			
Total Amount Extracted	20.0 g	Matrix	Tissue	
% Moisture	NA	Dilution	NA	
Dry Weight Extracted	NA	Collected	09/26/2018 18:30	
ICAL ID	U181015	Received	10/31/2018 11:30	
CCal Filename(s)	U181116A_01 & U181116A_17	Extracted	11/09/2018 16:30	
Method Blank ID	BLANK-66155	Analyzed	11/16/2018 09:13	

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	4.3	----	0.50	2,3,7,8-TCDF-13C	2.00	57
Total TCDF	11	----	0.50	1,2,3,7,8-PeCDF-13C	2.00	61
1,2,3,7,8-PeCDF	ND	----	2.5	2,3,4,7,8-PeCDF-13C	2.00	64
2,3,4,7,8-PeCDF	ND	----	2.5	1,2,3,4,7,8-HxCDF-13C	2.00	96
Total PeCDF	ND	----	2.5	1,2,3,6,7,8-HxCDF-13C	2.00	95
1,2,3,4,7,8-HxCDF	ND	----	2.5	2,3,4,6,7,8-HxCDF-13C	2.00	79
1,2,3,6,7,8-HxCDF	ND	----	2.5	1,2,3,7,8,9-HxCDF-13C	2.00	60
2,3,4,6,7,8-HxCDF	ND	----	2.5	1,2,3,4,6,7,8-HxCDF-13C	2.00	76
1,2,3,7,8,9-HxCDF	ND	----	2.5	1,2,3,4,7,8,9-HxCDF-13C	2.00	68
Total HxCDF	ND	----	2.5	1,2,3,4,7,8,9-HxCDF-13C	2.00	
1,2,3,4,6,7,8-HpCDF	ND	----	2.5	OCDD-13C	4.00	52
1,2,3,4,7,8,9-HpCDF	ND	----	2.5			
Total HpCDF	ND	----	2.5	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
OCDF	ND	----	5.0	2,3,7,8-TCDD-37Cl4	0.20	60

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

ND = Not Detected

EMPC = Estimated Maximum Possible Concentration

NA = Not Applicable

RL = Reporting Limit

NC = Not Calculated

Results reported on a total weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612-607-6444

Method 8290 Sample Analysis Results

Client - PACE Wisconsin

Client's Sample ID	FS8-2260-SS		
Lab Sample ID	40177238015		
Filename	U181116A_16		
Injected By	SMT		
Total Amount Extracted	20.1 g	Matrix	Tissue
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	09/27/2018 21:30
ICAL ID	U181015	Received	10/31/2018 11:30
CCal Filename(s)	U181116A_01 & U181116A_17	Extracted	11/09/2018 16:30
Method Blank ID	BLANK-66155	Analyzed	11/16/2018 09:59

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	0.50	2,3,7,8-TCDF-13C	2.00	63
Total TCDF	ND	----	0.50	1,2,3,7,8-PeCDF-13C	2.00	65
1,2,3,7,8-PeCDF	ND	----	2.5	2,3,4,7,8-PeCDF-13C	2.00	71
2,3,4,7,8-PeCDF	ND	----	2.5	1,2,3,4,7,8-HxCDF-13C	2.00	68
Total PeCDF	ND	----	2.5	1,2,3,6,7,8-HxCDF-13C	2.00	71
1,2,3,4,7,8-HxCDF	ND	----	2.5	2,3,4,6,7,8-HxCDF-13C	2.00	64
1,2,3,6,7,8-HxCDF	ND	----	2.5	1,2,3,7,8,9-HxCDF-13C	2.00	62
2,3,4,6,7,8-HxCDF	ND	----	2.5	1,2,3,4,6,7,8-HxCDF-13C	2.00	59
1,2,3,7,8,9-HxCDF	ND	----	2.5	1,2,3,4,7,8,9-HxCDF-13C	2.00	66
Total HxCDF	ND	----	2.5	1,2,3,4,7,8,9-HxCDF-13C	2.00	NA
1,2,3,4,6,7,8-HpCDF	ND	----	2.5	OCDD-13C	4.00	55
1,2,3,4,7,8,9-HpCDF	ND	----	2.5	1,2,3,4-TCDD-13C	2.00	NA
Total HpCDF	ND	----	2.5	1,2,3,7,8,9-HxCDD-13C	2.00	NA
OCDF	ND	----	5.0	2,3,7,8-TCDD-37Cl4	0.20	68

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

ND = Not Detected

EMPC = Estimated Maximum Possible Concentration

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